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ARIZONA MEDICINE

Journal of
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CONTENTS

SCIENTIFIC SECTION

- THE MANAGEMENT OF PYOGENIC MENINGITIS IN INFANTS
AND CHILDREN293
GEORGE W. SALMON, M. D., JAMES H. PARK, JR., M. D. and
LAURA BICKEL, M. D., *Houston, Texas*
- COARCTATION OF AORTA302
GEORGE S. ENFIELD, M. D., *Phoenix, Arizona*
- STUDIES ON THE EFFECT OF DILUTING FLUIDS ON
SEROLOGICAL TITRES304
I. A Comparison of Normal Saline, 2.5% Saline And Pooled
Negative Sera As Diluting Agents
EDWARD L. BREAZEAL, THEODORE R. REUSSER, *Tucson, Arizona*
- D.H.E.45 (DIHYDROERGOTAMINE) A NEW DRUG IN THE
TREATMENT OF MIGRAINE: A CASE REPORT.....307
EDWARD J. GOTTHELF, M. D., *Tucson, Arizona*

EDITORIALS

- PRESENT POLITICAL PROBLEMS.....308
" . . . ONE OF THE MOST THRILLING DEVELOPMENTS . . . ".....308
OFFICE OF THE SURGEON GENERAL.....309
THE SIGNIFICANCE OF THE FIRST LAPSE IN
OUTPATIENT VENEREAL DISEASE CLINICS.....310
NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, Inc.....311
THE AMERICAN COLLEGE OF PHYSICIANS.....311

ORGANIZATION SECTION

- DIRECTORY, ARIZONA STATE MEDICAL ASSOCIATION.....312
PRESIDENT'S MESSAGE312
REPORT OF THE DELEGATE.....313
MEDICO-LEGAL SECTION318
BOOK REVIEWS328

Volume 3

September, 1946

Number 5

~ ~ ~ Unto the Third and



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Fourth Generation ~ ~ ~

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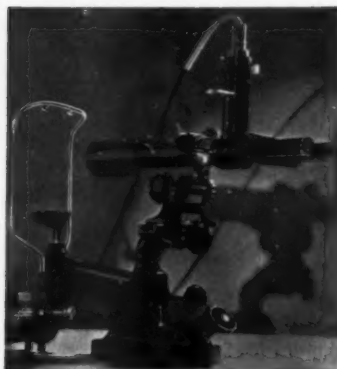
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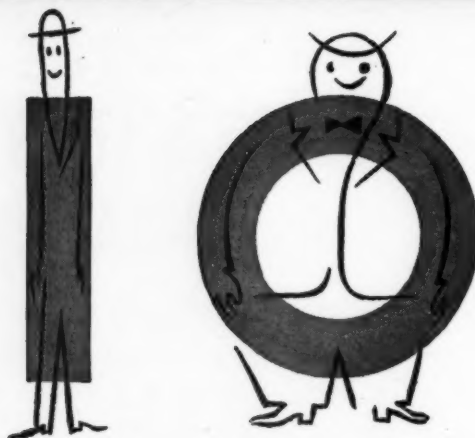
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1. Handbook of Nutrition, Chicago
A. M. A., 1943, p. 557.

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I. Watson, B. P.: J. Clin. Endocrinology 4:571 (Dec.) 1944.

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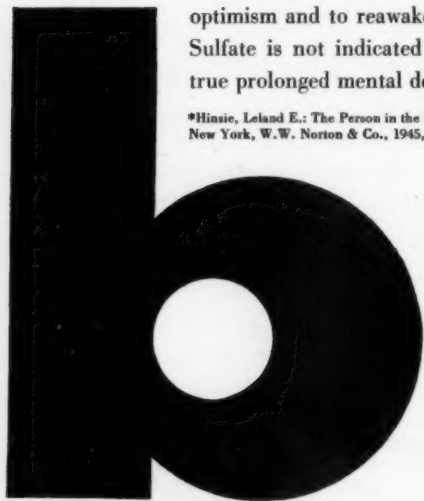
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*Hinsie, Leland E.: *The Person in the Body, an Introduction to Psychosomatic Medicine*, New York, W.W. Norton & Co., 1945, p. 223.

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*Harding, F. E.: Am. J. Obst. & Gynec., 57:600 (May) 1946

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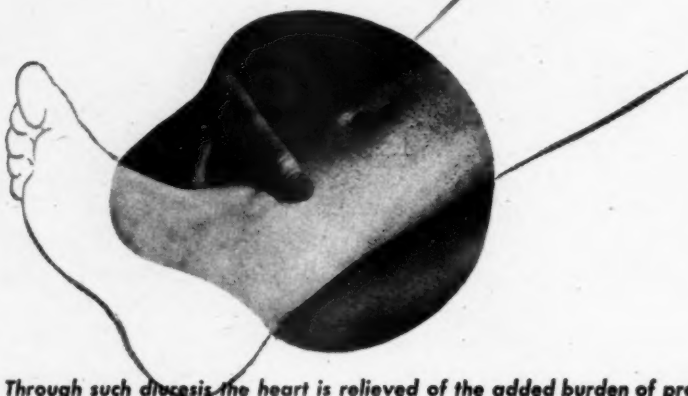
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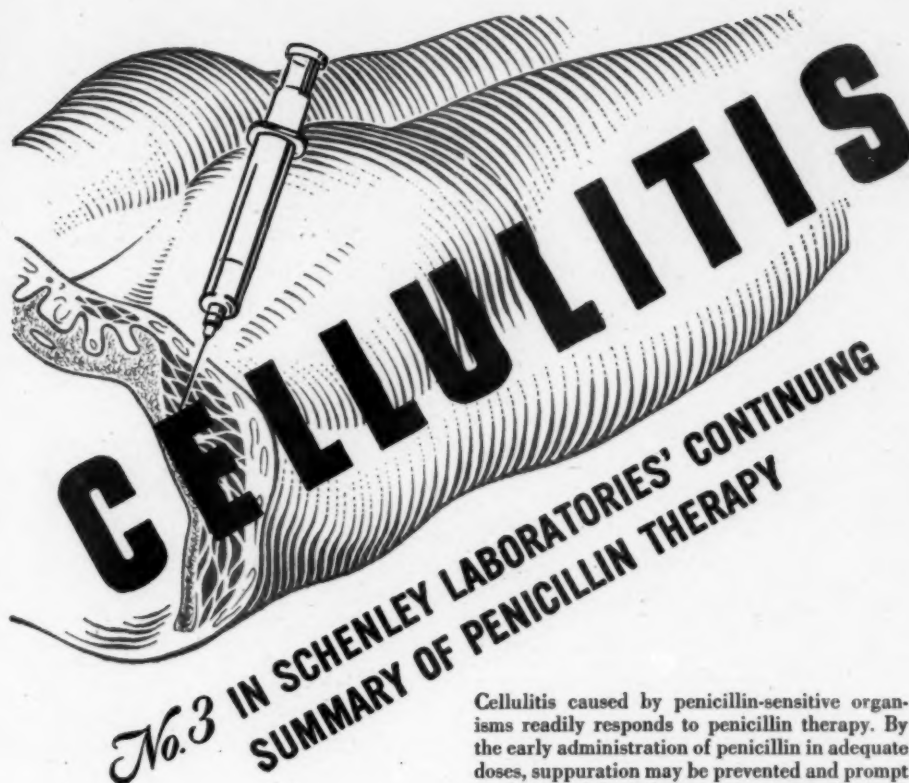
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WOLFGAST, C. F.: *The Clinical Use of Penicillin: A Report of 115 Cases Treated in an Army Hospital, Texas State J. M.* 40:225 (Aug.) 1944. FARQUHARSON R. F., GREY, P., & TOWNSEND, S. R.: *Results of Penicillin Therapy: A Report for the Joint Services Penicillin Committee, Canad. M. A. J.* 53:1 (July) 1945.



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child
have
rickets?



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Could
this
child
have
rickets?



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1. Follis, R. H. Jr.; et al: *Am. J. Dis. of Child.*, 66:1-11 (July) 1943.

2. Moore, C. U.; et al: *Am. J. Dis. of Child.*, 54:1227-28 (Dec.) 1937.

3. Park, E. A.: *Vitamin D Therapeutics, THE VITAMINS*, A. M. A., Chicago, 1937.

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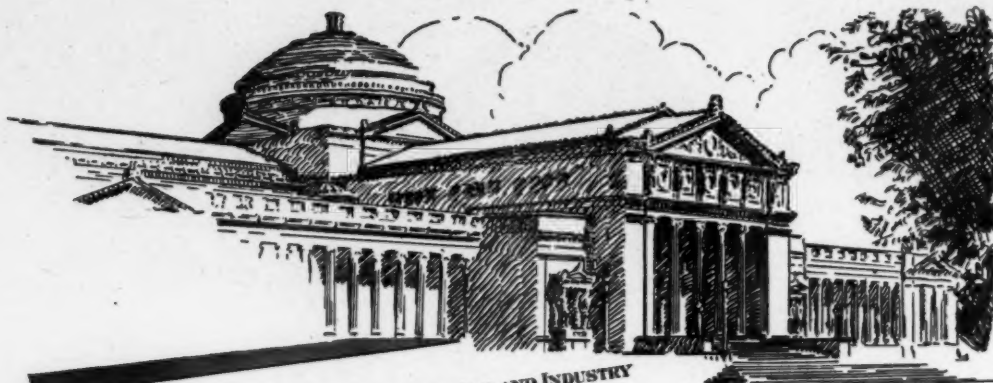
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1. J.A.M.A. 129:1080, Dec. 15, 1945
2. Illinois M. J. 88:85, August, 1945





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August 7, 1946

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BIBLIOGRAPHY: (1) Lehr, D.: *Proc. Soc. Exper. Biol. & Med.* 58:11, 1945. (2) Lehr, D.: *J. Urol.* 55:548, 1946.

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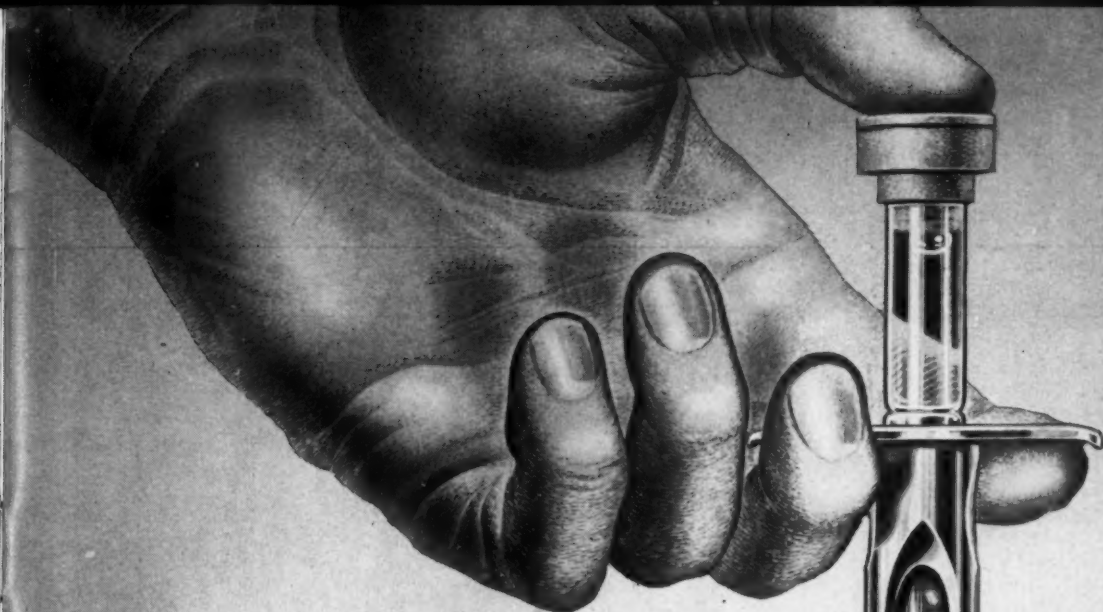
¹ Tillett, W. S., Cambier, M. J., and McCormack, J. E.: The Treatment of Lobar Pneumonia and Pneumococcal Empyema with Penicillin, *Bull. New York Acad. Med.* 20:142, March, 1944.

² Armstrong, S. H., Jr.; England, A. C., Jr.; Favour, C. B., and Scheinberg, I. H.: Anemia and Hypoproteinemia Complicating Severe Protracted Pneumonia: Treatment with Penicillin—Role of Specific Supportive Therapy in Recovery, *J.A.M.A.* 127:303 (Feb. 10) 1945.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.



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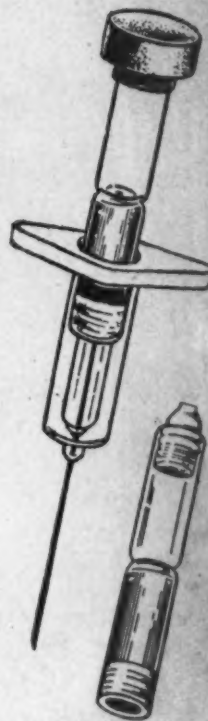


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PENICILLIN IN OIL AND WAX *Bristol* (Romansky Formula)



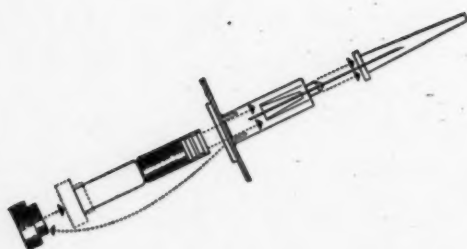
Main Illustration: The B-D® Metal Cartridge Syringe with cartridge inserted. *Smaller Illustration:* The B-D® Disposable Cartridge Syringe with cartridge inserted. Inset at right shows separate cartridge with special stopper which permits aspirating test.

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THE MANAGEMENT OF PYOGENIC MENINGITIS IN INFANTS AND CHILDREN

GEORGE W. SALMON, M. D., JAMES H. PARK, Jr., M. D.
and LAURA BICKEL, M. D.

From the Department of Pediatrics of the Baylor University College of Medicine and the Pediatrics Service and Junior League Children's Clinic of the Hermann Hospital, Houston, Texas

WITHIN the past few years pyogenic meningitis has entered the category of diseases for which there is specific therapy. It is today one of the most common severe diseases which can be cured by prompt and adequate application of newer modes of therapy. Some idea as to the comparative frequency of the various types of pyogenic meningitis may be obtained from an examination of 234 cases mentioned by Hartmann et al from the St. Louis Children's Hospital¹:

Meningococci 112
Pneumococci 34

Hemophilus Influenzae 33
Hemolytic Streptococci 14
Miscellaneous Bacteria 9
"Sterile" 32

The material to be presented here does not represent a series of cases; each was selected to illustrate some particular point. Rather than present synopses of cases, we have prepared charts which include all of the pertinent data in each case. Such information as the results of urinalyses, Wassermanns, chest plates, tuberculin tests, etc., has not been included in these charts unless they showed positive findings.



— SUBCUTANEOUSLY. 93 c.c. of 1% SODIUM SULFADIAZINE
- - - - - INTRAVENOUSLY. 18 c.c. of 5% SODIUM SULFADIAZINE

AGE 15 MONTHS : WEIGHT 9.3 KG. : DOSE = 0.1 GM/KG

Figure 1: Comparison of blood levels to be obtained from the subcutaneous and the intravenous administration of sodium sulfadiazine. Levels as whole blood free sulfadiazine. From (2). After several injections higher levels are built up, but this serves to illustrate the type of curve obtained by each method.

Case Number	Spinal Fluid Sulfadiazine Level
1	0
2	0
3	0
4	1.92 mgs. %
5	0
6	0
7	0
8	0
9	0
10	0.99 mgs. %
11	1.65 mgs. %
12	1.00 mgs. %
13	0
14	0

Spinal fluid examinations on fourteen normal infants and children not receiving a sulfonamide. Skin and subcutaneous tissue infiltrated with 2 cc. of 1.5% solution of procaine hydrochloride. Spinal fluid levels as free sulfadiazine.

Figure 2. Procaine Hydrochloride and the sulfonamides give the same color reaction. For this reason more accurate levels may be obtained if another local anesthetic, such as metycaine, which does not give this color reaction is used. From (2).

PNEUMOCOCCAL MENINGITIS

The diagnosis of meningitis is outside the province of this discussion. However, the outstanding symptoms and signs of the cases to be presented are mentioned on the chart illustrating each case. We do want to emphasize the fact that some cases show no clinical evidence of meningeal irritation. This is probably because in pneumococcal meningitis the inflammation is principally over the convexity of the brain. However, evidence of meningeal irritation is not to be regularly expected in any type of meningitis in infants, or in stuporous patients of any age group. It is important to realize that a spinal fluid examination is indicated in any patient with unexplained fever. Unfortunately, whether or not there was evidence of meningeal irritation is not mentioned on the charts.

Specific Therapy: Of the sulfonamide drugs we prefer sulfadiazine or sulfamerazine. Sulfadiazine was used in most of the cases presented here. The dose of sulfamerazine is about two-thirds to three-fourths that of sulfadiazine since it is more slowly excreted by the kidneys. With sulfadiazine, sulfamerazine, or sulfapyridine the spinal fluid sulfonamide level is usual-

ly about 65 to 75 per cent of the blood level. We avoid sulfathiazole because the spinal fluid level is usually only about 20 to 30 per cent of the blood level.

We prefer to maintain a blood level of about 15 to 20 mgs. per cent (as the free form). The dose is the amount required to maintain this level. This is usually at least 3 grains per pound of body weight each twenty-four hours. Any type of meningitis is a serious disease and oral therapy should not be relied on, especially during the first few days. The sodium salt of the sulfonamides may be injected intravenously in a 5 per cent solution in water or subcutaneously in a 1 per cent solution in saline or lactate-Ringer's. A comparison of blood level curves to be obtained after these two methods of administration is illustrated in figure 1. A more even level is obtained with subcutaneous administration. One-third of the twenty-four hour dose should be injected subcutaneously every eight hours.

The solubility of both the sulfonamides and their acetyl derivatives in the urine is increased several hundred per cent if the pH can be raised to a range of 7.0 to 8.0³. It is important to realize, however, that the solubility is improved very little until this range is reached. Quite large doses of alkali are required. The pH of the urine should be checked routinely with nitrazine paper.

Procaine hydrochloride gives the same color reaction as the sulfonamides when the Bratton-Marshall determination is used. Occasionally when using procaine hydrochloride as a local anesthetic, enough procaine may get into the spinal needle to slightly alter the spinal fluid sulfonamide level. This is illustrated in figure 2.

Pneumococcal meningitis is a highly fatal disease and penicillin should be used in addition to a sulfonamide. On a clinical basis it is our

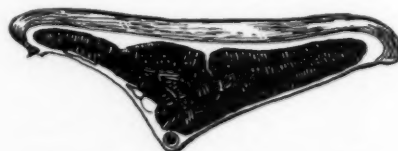


Figure 3. Cross-section of one of the adrenal glands in a case of Waterhouse-Friderichsen Syndrome. Note that the central portion is replaced by a massive hemorrhage.

impression that the course of the disease is much more satisfactory when both are used. On a pharmacologic basis it is highly probable that their modes of action are different, since the action of each is inhibited by different substances. It is possible that the two may even be synergic⁴.

Although we have used 10,000 to 25,000 units of penicillin intramuscularly, depending somewhat upon the size of the patient, these doses have been empirical in the sense that assays of the blood and spinal fluid for penicillin were not performed in these cases. A two-hour is preferable to a three-hour interval between doses. Penicillin should be injected intrathecally at least once daily, and in the first few days perhaps twice daily. The systemic administration of penicillin does not consistently yield adequate concentrations in the spinal fluid⁵. We usually inject 10,000 units in 10 c.c. of saline and have seen no adverse affect of its intrathecal use in these and other cases.

The tendency of pneumococcal meningitis to relapse has been emphasized by others⁶, and is well illustrated in Case R. (Chart 5). For this reason energetic treatment with both penicillin and sulfadiazine should be continued well into the period of recovery and sulfadiazine alone into the period of convalescence.

The intrathecal injection of sulfonamides in pneumococcal meningitis is not advisable (this will be further discussed in relation to hemolytic streptococcal meningitis). Although pneumococcal antiserum may be of value in some cases⁷, with both sulfonamides and penicillin available, we doubt that it is longer needed.

Symptomatic and Supportive Therapy: This is extremely important in these patients, many of whom are critically ill, stuporous, and convulsive. They all require parenteral fluids. Recently a mixture of equal parts of 10 per cent glucose and 10 per cent Amigen* has been frequently used; this may be given either intrave-

* Supplied to us through the courtesy of Mead Johnson & Co.

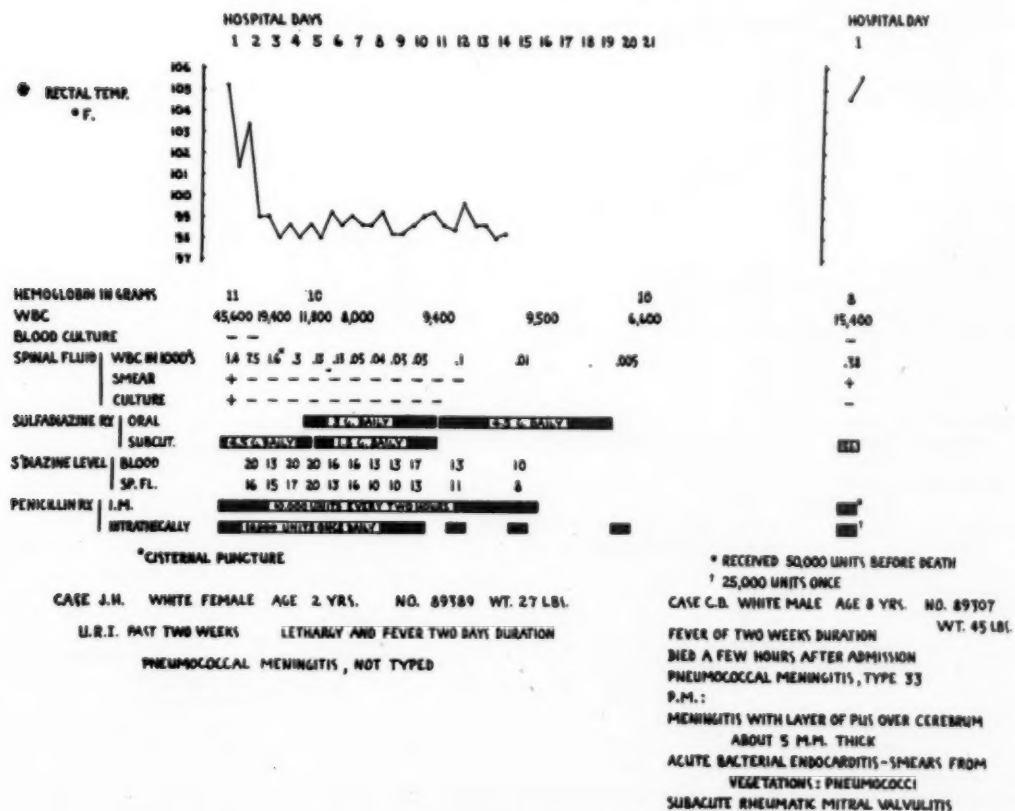
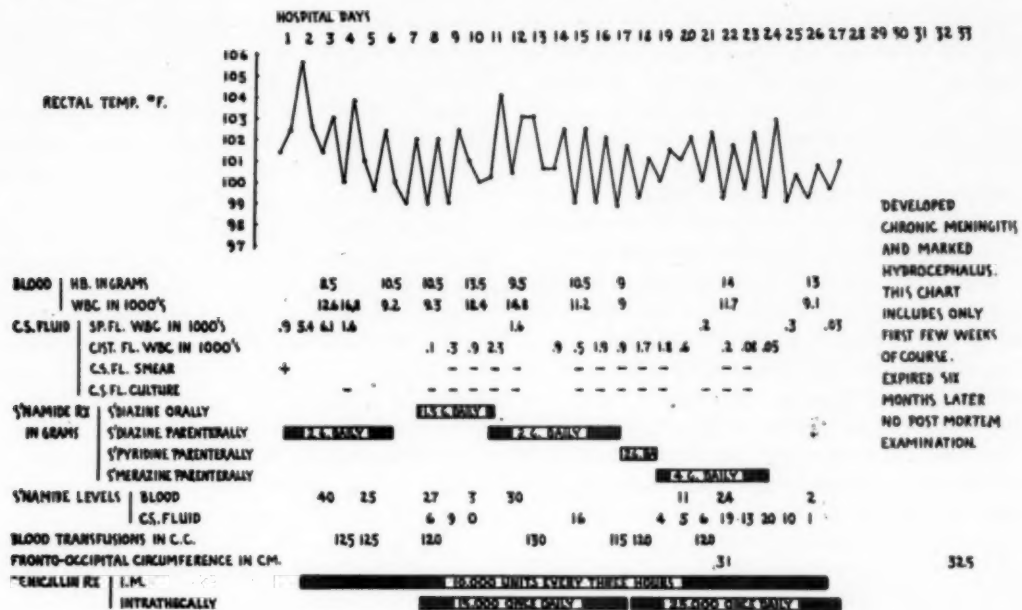


CHART 1.



CASE L.H. 3 MOS. WHITE MALE NO. 81447 WT. 13 LBS. PNEUMOCOCCAL MENINGITIS, TYPE 12.
FEVER AND CONVULSIONS OF 24 HOURS DURATION NYSTAGMUS
BILATERAL SUP. OTITIS MEDIA, IMPROVED WITH TREATMENT

CHART 3.

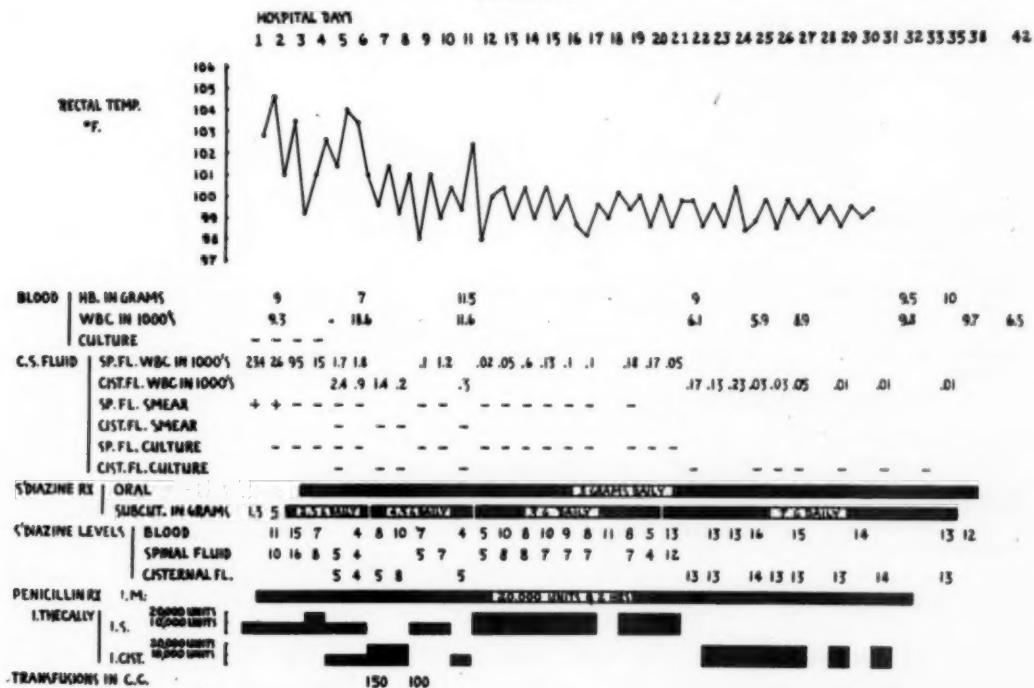


CHART 4.

was delayed to the second day until the child could be hydrated, transfused, and his infection well under the influence of specific therapy.

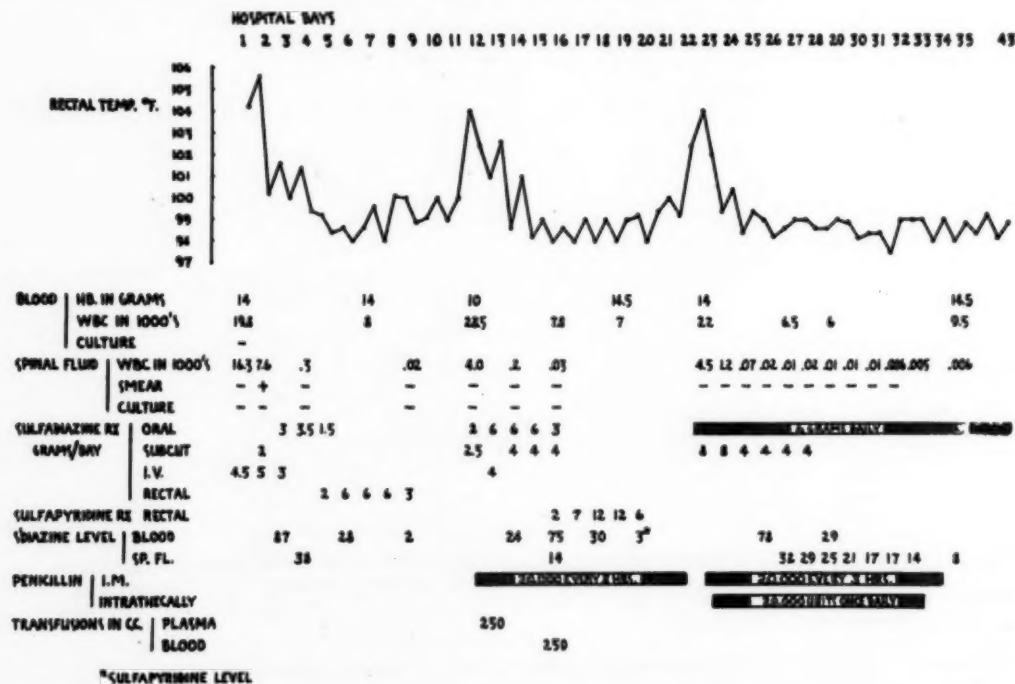
Case S.M.P. (Chart 2) illustrates a case of pneumococcal meningitis with a fulminating course. This child died in the hospital emergency room after having been ill but a few hours. Evidence of actual meningitis at the time of postmortem examination was minimal.

Case L.H. (Chart 3) illustrates a case of pneumococcal meningitis which developed one of the more dreaded complications, chronic meningitis and hydrocephalus. Here is an example of inadequate therapy. Intrathecal penicillin was not begun until the eighth hospital day. Note that when the route of administration of sulfadiazine was changed from parenteral to oral the blood level promptly fell to 3 mgs. per cent. Oral therapy should never be relied on in such a serious disease. Although the draining ears improved with treatment, this improvement was not rapid and it is altogether likely that a serious mistake was made in not subject-

ing this child to a bilateral antrotomy. The nystagmus is suggestive but not diagnostic of labyrinthitis.

Case E.B. (Chart 4) illustrates a very severe case of pneumococcal meningitis. The response to therapy was slow, possibly because inadequate sulfadiazine levels were maintained. In the course of this disease a serious problem for the clinician is encountered—that of persisting low grade pleocytosis in the spinal fluid. This may be due to meningeal irritation from intrathecal penicillin or to persisting low grade infection. In the former instance intrathecal penicillin should be discontinued; in the latter, it would be dangerous to do so. Note that when the route of intrathecal administration was changed from lumbar to cisternal and the sulfadiazine levels were raised, the pleocytosis improved.

Case R. (Chart 5) illustrates a case of pneumococcal meningitis with two relapses. Since the original attack and each of the relapses were treated differently this case actually illustrates three modes of therapy.



CASE R. WHITE MALE AGE 3 YRS. 7 MOS. WEIGHT 40 LBS. CASE NO. 280

PNEUMOCOCCAL MENINGITIS, NOT TYPED VOMITING AND FEVER OF TWO DAYS DURATION COMATOSE

SEQUELLA: BILATERAL NERVE DEAFNESS

CHART 5.

The original attack was treated with sulfadiazine alone and the response was satisfactory. When the route of administration was changed to rectal the blood level fell to 2 mgs. per cent. When the sulfadiazine was discontinued the disease relapsed within forty-eight hours.

The first relapse was treated with sulfadiazine and systemic administration of penicillin. However, when the route of administration of the sulfonamide (which had been changed to rectal the blood level fell to 3 mgs. per cent. When the sulfonamide was discontinued the second relapse began within twenty-four hours. This second relapse actually began while the child was receiving 20,000 units of penicillin intramuscularly every three hours.

The treatment of the second relapse was different in two respects. This time intrathecal penicillin was administered and the oral administration of sulfadiazine was continued well into the period of convalescence.

This case also illustrates one of the complications of pyogenic meningitis, bilateral nerve deafness.

INFLUENZAL MENINGITIS

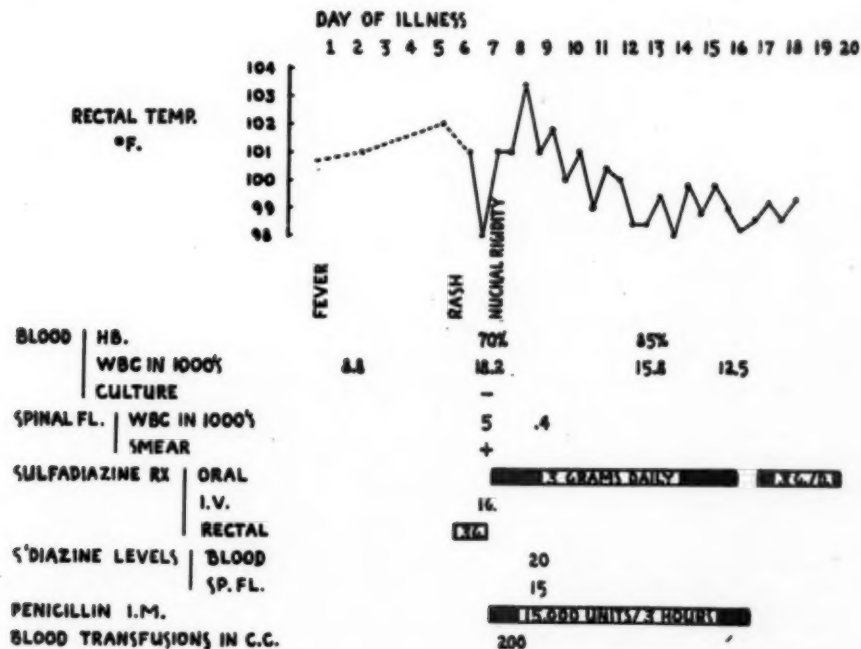
Since the problem of influenzal meningitis is somewhat different from the remainder of the group, it will not be discussed here. Although the disease is influenced by the administration of sulfonamides, it is more markedly influenced by type-specific antiserum.⁷ It is also likely that it will be influenced by streptomycin.⁸

STAPHYLOCOCCAL MENINGITIS

This is a relatively rare disease. The one case that we have seen was a complication of an obvious pyoderma. The administration of sulfathiazole was without apparent effect; the disease was fatal. We have not had an opportunity to treat a case since penicillin became available.

HEMOLYTIC STREPTOCOCCAL MENINGITIS

The problems and principles of treatment of hemolytic streptococcal meningitis are similar



NO. 8283 CASE W.F. WHITE MALE AGE 9 MOS. WT. 16 LBS.

ACUTE MENINGOCOCCAL MENINGITIS

CHART 6.

to those of pneumococcal meningitis. We recommend that both sulfadiazine (or sulfamerazine) and penicillin be administered systemically and that penicillin be administered intrathecally. Since the bacteriostatic activity of sulfanilamide is much higher for hemolytic streptococci than for pneumococci, and since sulfanilamide is much more soluble than the other sulfonamides, it may be advisable to administer it intrathecally (in 0.8 per cent solution in saline). We do not recommend the intrathecal administration of other sulfonamides; they are very insoluble and their soluble form (the sodium salt) is alkaline and irritating. However, since the advent of penicillin, it should be administered intrathecally in place of sulfanilamide.

A very high percentage of cases of hemolytic streptococcal meningitis are secondary to an obvious source of infection. Since many are otitic in origin, the ear drums should always be carefully examined and incised if indicated. If

there is any indication, a mastoidectomy should be performed; the lateral sinus and the dura should be uncovered.

The only case of hemolytic streptococcal meningitis that we have seen in the past few years was in an infant three months of age. The disease was treated as outlined above with an uneventful recovery.

MENINGOCOCCAL MENINGITIS

Results of the treatment of meningococcal infections with systemic administration of the sulfonamides have been so satisfactory that this disease is no longer one of the major therapeutic problems in the field of pediatrics. With early and adequate administration of sulfonamides the mortality has been lowered to about five per cent and the incidence of complications sharply reduced. Meningococcal infections will also respond to penicillin, and certainly this additional therapeutic agent should be used, especially in the more severe cases. We no longer use meningococcal antiserum.

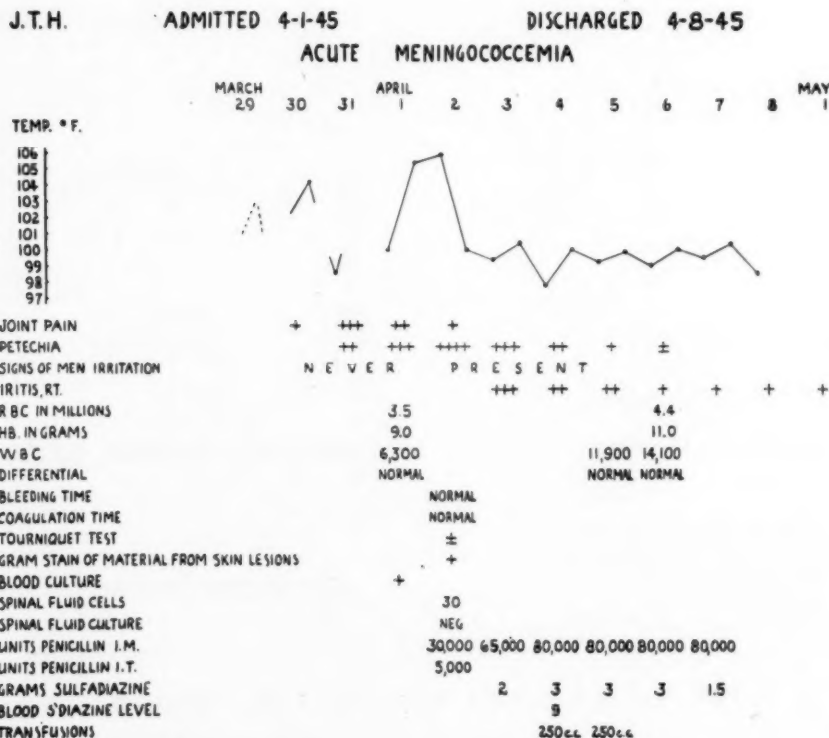


CHART 7. Reproduced from (10) with permission of the editor of the *Texas State Journal of Medicine*.

The principles of management of meningococcal meningitis are similar to those of pneumococcal meningitis. Meningococcal meningitis in the majority of instances is a milder disease and responds more readily to treatment. Since it has been shown that small doses of sulfonamides taken prophylactically are of value in meningococcal epidemics⁹, we commonly advise that members of the family and contacts be so handled.

Case W.F. (Chart 6) illustrates a typical case of meningococcal meningitis. The value of intramuscular penicillin without simultaneous intrathecal administration as used in this case has already been discussed.

Case J.T.H. (Chart 7) illustrates a second typical variety of meningococcal infection, acute meningococcemia. It is interesting to note that gram negative diplococci were recovered from the petechial rash. This case illustrates one of the not uncommon complications, acute iritis. Other complications sometimes seen are permanent nerve deafness, various form of paralysis, arthritis late in the course, and hydrocephalus.

A third variety of meningococcal infection is chronic meningococcemia. These cases must be differentiated from brucellosis, subacute bacterial endocarditis, tuberculosis, and other diseases which may lead to an erratic recurring febrile course.

A fourth variety of meningococcal infection is fulminating meningococcemia. These cases run a rapid stormy course and may die within a few hours. Not uncommonly the postmortem examination shows bilatetral adrenal hemorrhage (Waterhouse-Friderichsen Syndrome). Figure 3 is a drawing of a cross-section of one of the adrenal glands in such a case. When such a diagnosis is suspected prompt intravenous administration of a sulfonamide and penicillin is indicated together with such supportive measures as adrenal cortex preparations, intravenous plasma or glucose in saline, oxygen, and adrenalin.

STERILE MENINGITIS

Sterile meningitis is a term usually reserved for cases of pyogenic meningitis from which no definite demonstrable bacterium is recovered. It is probable that the majority of such cases are actually meningococcal. Case R.W. (Chart 8) illustrates a typical case of sterile meningitis.

At the same time the child's mother had an acute upper respiratory infection from which meningococci were recovered.

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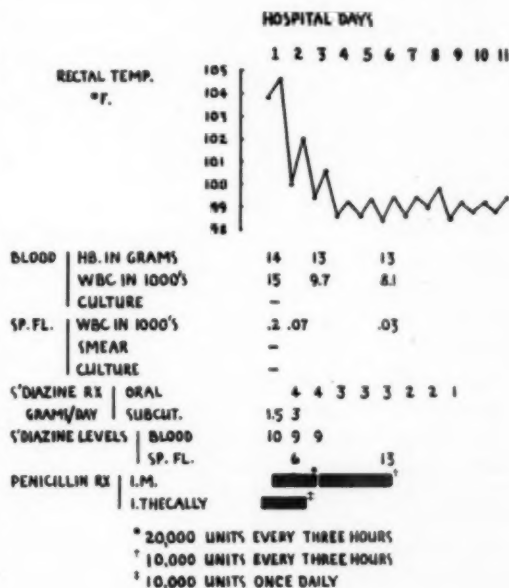


CHART 8.

COARCTATION OF AORTA

GEORGE S. ENFIELD, M. D.

Phoenix, Arizona

COARCTATION of the Aorta is a localized narrowing or stenosis of the Aorta near the insertion of the ductus arteriosus, which may remain patent.

It has been concluded that abnormal development during embryonic life, localized at the junction of the fourth, fifth and sixth left aortic arches is responsible. Syphilis is not an etiologic factor.

There are two types: (1) Infantile, as found in stillborn and young infants, is usually a narrowing of the isthmus of aorta. (2) Adult, is a constriction distal to insertion of ductus arteriosus. This is the more common type.

Other anomalies, such as bicuspid aortic valve, are often associated in about 35% of cases. Coarctation is more frequent in males (3 to 1).

Blackford estimated that this condition was present once in 1500 necropsies. Levine stated that 0.1% of the entire population have this anomaly. Perlman reporting result of examination for army service in the 18 to 35 year group found coarctation of aorta present once in 10,000 examinations.

Results of coarctation are:—

1. Dilatation of aorta above or proximal to constriction. (Aneurysm)

2. Dilatation of collateral circulation via internal mammary, scapular and intercostal arteries.

3. Cardiac hypertrophy.

Symptoms and Signs:—

1. Blood pressure abnormalities. Hypertension and high pulse pressure in upper extremities with low or absent blood pressure in femoral arteries is usually found.

2. Dilatation, pulsation and tortuosity of vessels of collateral circulation to varying degree, i.e., internal mammary, intercostal, scapular and deep epigastric vessels is always found.

3. Murmurs over precordium and back, sometimes over anastomatic vessels and at times accompanied by palpable thrills, are present.

4. Enlargement of heart, which with hypertension and associated valvular defects may cause failure.

5. X-ray evidence, such as absence of aortic knob, dilatation of ascending and transverse portions of aorta, erosion of lower rib margins and enlargement or roundness of left ventricle, confirms the diagnosis.

Prognosis:—

Abbott in 1928 reported 200 cases in which average age at death was 32 years and oldest 92 years. Many die early as a result of heart failure, rupture of the aorta, apoplexy or subacute bacterial endocarditis.

Factors such as degree of narrowing, strenuousness of occupation and frequency of infections enter into prognosis.

Coarctation of aorta should be considered in differential diagnosis of hypertension in young people, especially males and those showing "hyperthyroid" signs. More frequent chest plates in these patients will help in accurate diagnosis.

Patient—C. C. C. Aged 44. Trouble man for Gas Company.

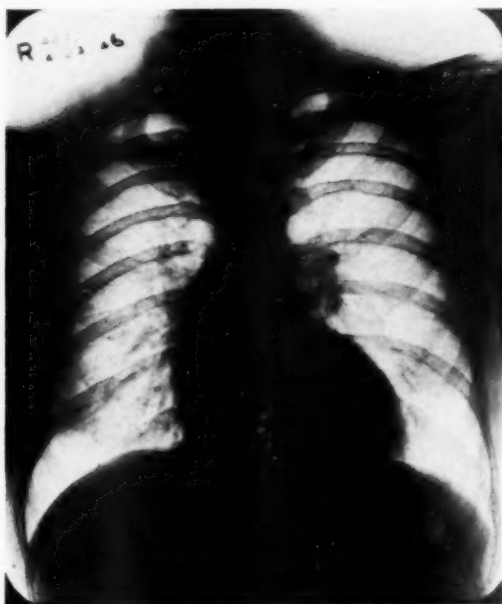
C. C.—Fever, chills, pain and swelling at site of extracted tooth in lower jaw.

H. P. I.—On April 20th had an infected left, lower bicuspid tooth extracted under local anesthesia, preparatory to having remaining eight extracted and completion of dentures. The next evening, April 21st, had severe pain in lower jaw and fever up to 102.5°F. Mouth wash and analgesics were prescribed and since his condition did not improve, he was admitted to St. Monica's Hospital, April 23rd.

Patient has been seen occasionally in office since June 26, 1945, when he was found to have Moderate Cardiac Hypertrophy, Hypertension with BP of 190/90 and a loud diastolic aortic murmur. He returned to work after a week of rest and has been under observation at monthly intervals until the present illness.

He is very fortunate in that his work is light as a trouble man for the Gas Company, and he works only five days a week. Thus it was possible for him to get a good rest on his days off.

The blood pressure varied from 200/90/80 to 180/70. The patient was never decompensated but did complain at times of pain in lower back, some pain around the heart and an occasional choking in the throat. The urine



showed sp. gr. of 1.032 with slight trace of albumin and occasional hyaline cast.

P. M. H.—Patient had minor infections of childhood, but does not recall severe throat infections or Rheumatic Fever. He was a healthy boy and took an active part in sports.

He was raised in a small town in northern Texas and at 17 years of age had Influenza and Bilateral Pneumonia. During this illness he had what was described as a blood vessel disturbance in his left leg, (possibly Thrombophlebitis).

Married at 22, he became a plasterer and cement finisher, which was strenuous work. In 1930 he was denied insurance because of hypertension. In 1932 he was treated for "heart trouble" and spent considerable time at bed rest. From 1928 until his physician died in 1945, he was under observation of one physician in Phoenix. In 1940 he was treated for one week in a Phoenix hospital for pneumonia and recuperated at home. No chest x-rays had been taken up until his present illness. Since 1940 he has noticed palpitation, arrhythmia and dizziness with a tendency to faint.

F. H.—Father died at 53, following surgery. Mother is living and well at 65. Two brothers living and well, one sister living and well. Wife is well and two sons, aged 21 and 20, are in the Army.

Physical Examination—General appearance: well developed, middle-aged male, weighing 185 lbs. and over 6 feet tall. He is febrile and apprehensive. Rapid, forcible pulsations are noted suprasternally, above and below clavicles and over brachial areas. No cyanosis noted.

Head—eyes, ears and nose—negative.

Mouth—tongue coated, upper denture, 7 lower teeth remaining are carious and gums are pyorrheic. Site of extracted left lower bicuspid tooth is healing.

Throat—tonsils are not grossly infected, but are enlarged.

Neck—there are marked carotid, suprasternal and supraclavicular pulsations.

Chest—normal in shape. Strong pulsations felt over both suprascapular areas and in the 5th and 6th interspaces near xiphosternal junction.

Lungs—No abnormal findings.

Heart—apex located in the 5th l.i.s. 12 cm. to l.m.s.l. Right border heart in parasternal line at 4th r.i.s. The apex beat is forcible and strong, no thrills. The temporal and radial vessels are sclerotic. There is a well developed "Corrigan" pulse. Abdominal aortic and femoral pulsations are greatly diminished. There is no pistol shot sound over the femorals. There is a to and fro aortic murmur heard best at 2nd r.i.s.; louder in diastole and transmitted down to the apex. The mitral sounds are lumpy.

B. P.—Brachial—

L. A. 200/80—170/80—160/70

R. A. 164/70

Popliteal Left—95/70; Rt.—100/80

Abdomen—negative.

Extremities—the left leg is the site of extensive varicose veins and the left calf measures 1½ inches greater in circumference than the right. The circumference of the thighs is equal.

Laboratory Data—Blood culture on admission showed *Streptococcus Viridans*.

Urine—negative.

Blood Count—4,800,000 RBC—7200 WBC—94% HB (14.4 gm) Polys 77% — Lym. 19—Momo. 4- 66 segs.—11 stabs.

After three days the white count showed 6400—66% Poly.—32% Lym. and 2% mono., 58 segs.—3 stabs.—5 eosinophiles. After one week the sedimentation rate was 11 mm. in one hour. The second blood culture taken on the sixth hospital day showed no growth. Blood serology was

negative and the blood sulfa level was 8.4 mg. per 100 cc.

Electrocardiograph—taken on the fourth hospital day. Rate 70. Marked left axis deviation. Regular sinus mechanism with first degree heart block and QRS interval at upper limits of normal. Slurring in leads I and II.

Clinical Conclusion—First degree heart block. The prolonged QRS interval represents early intraventricular conduction deformity. The slurring in leads I and II are compatible with but diagnostic of myocardial damage to moderate degree. (R. S. Flinn, M.D.)

X-ray of Chest—for size of heart and great vessels, by Dr. John Foster on day after admission. Both diaphragms are normally outlined. Trachea is medially placed. The aortic is not visualized. The heart shows definite evidence of left ventricle enlargement. Both lungs show slight increase in bronchovascular marking with an accentuation in the right base. No definite effusion is seen, however. The ribs show scalloping of their under surfaces involving especially the 2nd, 3rd, 4th, 5th, 6th, 7th, 8th and 9th ribs.

Impression—The findings are compatible with a diagnosis of coarctation of the aorta with left ventricular enlargement.

Diagnosis—(Final)

1. Coarctation of Aorta—Left Ventricular Hypertrophy.
2. Bacteremia—(from recent tooth extraction).
3. Varicose veins, left leg.
4. Pyorrhea.

Course in the hospital—Admitted 4/23/46 and blood culture taken at once. Then placed on large doses of penicillin I. V. and I. M. and sulphadiazine by mouth.

Temperature ranged from 103° to 104½°F. on first day to normal on the morning of the second day, with slight evening rise the same day. The third day temperature was normal again and stayed down until discharge on the twelfth day.

Sulphadiazine was discontinued on the fourth day, when sulfa crystals were found in the urine. Penicillin units 1,700,000 was given before discharge and daily doses of 100,000 penicillin in oil up to a total of 2,300,000 oxford units. The patient is now recuperating at home and should be able to return to work six weeks after leaving hospital. There has been no recurrence of febrile symptoms or evidence of heart failure.

Treatment—In this case Penicillin and Sulphonamides definitely cured the Bacteremia, which was detected early. Digitalis was not given and should be reserved for treatment of frank heart failure. Drugs to lower the blood pressure were not tried, because the cause was entirely mechanical.

In the past eight years much experimental work regarding the surgical correction of Coarctation has been done by Gross, Blalock and others. A twelve year old girl was successfully operated on in 1945 by Gross, who excised the coarctation and anastomosed the aorta end to end. Surgery should be indicated only in those patients who do not develop adequate compensatory circulation.

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STUDIES ON THE EFFECT OF DILUTING FLUIDS ON SEROLOGICAL TITRES

I. A Comparison Of Normal Saline, 2.5% Saline And Pooled Negative Sera As Diluting Agents

EDWARD L. BREAZEALE—1

THEODORE R. REUSSER—2

IN recent years it has been becoming increasingly frequent for the physician to request the laboratory to determine the number of

"Units of reagin" or Kahn units in a positive sera. Such a quantitative study of any given sera is of aid to the doctor in following his patient's response to treatment. However, the practice of more or less arbitrarily establishing

1—Division of Laboratories, Arizona State Health Department, Tucson, Arizona.

2—Tucson Medical Laboratories, Tucson, Arizona.

a "unit" seems undesirable and artificial. It would appear that a straight dilution figure the same as employed in reporting typhoid agglutinations would be of more value and also less confusing.

In performing the standard quantitative test on a given serum¹ the sample is serially diluted with saline solution containing 2.5% NaCl. A one tube Kahn is then run on each dilution using 0.025 ml of standard Kahn antigen. The tubes are then shaken, 0.5 ml of 2.5% NaCl added, and read immediately. Those tubes giving a 3+ or better are recorded and the highest dilution giving a 3+ reading times four gives the number of Kahn units present in the specimen. In practice this method is quite satisfactory, but presents certain points that to the analyst are not entirely free from criticism. One of the most obvious ones is that of the artificial standard of unit system. The second being that the unnatural media of 2.5% saline is used as a diluting agent. However, when normal saline (0.85%) is employed the results are not markedly different from those obtained by employing the more concentrated solution.

In a paper by Greene, Breazeale & Croft² in 1939 a report was made on a quantitative study of syphilitic sera. In this paper the investigators used the techniques of Kahn, Hinton and Kline. It was found that the Hinton in general gave higher titres than did either the Kahn or the Kline. These authors recommended that the quantitative Kline be applied to the positive sera to (a) eliminate zoning and (b) to follow a course of treatment.

Since early work in this laboratory² and

the results of many other workers have definitely established the value of the quantitative titring of positive sera it appeared evident that a study of various diluting media would be of value.

In the earlier studies from this laboratory^{2,3} normal saline (0.85% NaCl) was employed. The results obtained were satisfactory. However, at that time the question of using an utterly unlike media as a diluting fluid was raised—why not use known negative sera? In order to determine the relative effects of saline (2.5% NaCl as recommended by Kahn) and known negative sera the following experiments were set up.

EXPERIMENTAL

Blood samples were drawn on known clinically positive syphilitics and carefully chosen known sero negative blood donors. The samples were allowed to clot, the clot removed, the sample centrifuged at high speed, and the clear supernatant sera poured off. Only those sera giving a clear unhemolyzed appearance were used. The specimens were divided into two equal parts (A) and (B) and inactivated in an electrically controlled water bath at 56°C. for 30 minutes. Standard Kahns, Klines and Hinton's were run on all samples and the results recorded as control results.

Part (A) was then diluted with 2.5% saline in the ratios of 1:1, 1:2, 1:4, 1:8, 1:16, 1:32, 1:64, 1:128, 1:256, 1:512, and 1:1024. Part (B) was diluted with pooled inactivated negative sera in the same proportions. One tube Quantitative Kahns (0.025 ml antigen) Klines and Hinton's were run on all specimens. The results are summarized in Table I.

TABLE I
Comparison of Saline and Normal Sera as Diluents
KAHN RESULTS

TABLE II
KAHN TEST

Control Reaction	Dilution Media	DILUTION										
		1:1	1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512	1:1024
4+	Saline Sera	4	4	2	+	—	—	—	—	—	—	—
		4	4	4	4	3	3	2	1	1	+	—
4+	Saline Sera	3	3	4	3	2	—	—	—	—	—	—
		3	3	4	4	4	3	3	1	+	—	—
4+	Saline Sera	4	4	4	3	2	2	1	—	—	—	—
		4	4	4	4	3	3	3	2	2	1	+
3+	Saline Sera	3	3	2	1	—	—	—	—	—	—	—
		3	4	4	3	2	1	+	—	—	—	—
3+	Saline Sera	3	3	2	1	—	—	—	—	—	—	—
		3	4	4	3	1	+	—	—	—	—	—
3+	Saline Sera	3	3	1	—	—	—	—	—	—	—	—
		3	3	3	2	1	1	+	—	—	—	—
2+	Saline Sera	2	2	1	—	—	—	—	—	—	—	—
		2	3	2	1	+	—	—	—	—	—	—
2+	Saline Sera	2	1	—	—	—	—	—	—	—	—	—
		2	2	1	1	—	—	—	—	—	—	—
1+	Saline Sera	1	1	—	—	—	—	—	—	—	—	—
		1	2	1	—	—	—	—	—	—	—	—
Negative	Saline Sera	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—

RESULTS

Table I gives the summary of the titres obtained on the various sera when (a) saline (2.5% NaCl) and (b) normal negative sera were used as a diluting media. The figures given are the maximum reacting titre for those sera; that is, the number of sera giving a reaction at that dilution. Only the results of the Kahn tests are given, since excellent agreement was obtained by the three tests used.

Table II gives a series of ten typical samples showing the type of curves obtained with the two media.

DISCUSSION

The data given in Table I indicates that where pooled negative sera is used as a diluting media titres of from four to ten times as high are obtained. It will be noted that in the case of the strongly positive sera all of those diluted with saline were negative at 1:64, while those diluted with negative sera remained positive as high as one part in 512. If we use the half figure (where 50% were negative) about the same picture is obtained. This same trend is shown throughout the table.

Table II brings out several interesting points. One of the most interesting in the fact that a surprisingly large number of sera showed zoning reactions (11 sera in the 2+ and 3+ range). This table also shows the extremes in the differences found in titres obtained by using the two different diluting medias.

The advantage of determining the titre of any given sera is to enable the physician to follow the patient's response to therapy and judge his treatment accordingly. Obviously, if such is the case, if it is possible to lengthen this yardstick, it would give the physician a more accurate and more delicate means of measuring his patient's response. By the use of normal negative sera we have been able to accomplish this very point to the extent of from four to a little less than ten times.

It would appear that the use of pooled negative human sera as a diluting fluid should yield a more accurate figure as to the degree of positivity of any sera than would saline, since we are using a natural media (sera) rather than an artificial media (saline 2.5% NaCl). Since this is the case we have accomplished two factors in using sera as a diluting media, (a) increased

the length of our scale, and (b) increased the accuracy of our titrations.

CONCLUSION

By use of a diluting fluid of normal negative sera considerably higher titration figures may be obtained than when saline is employed.

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D.H.E.45 (DIHYDROERGOTAMINE) A NEW DRUG IN THE TREATMENT OF MIGRAINE: A CASE REPORT

By EDWARD J. GOTTHELF, M. D.

Tucson, Arizona

MIGRAINE is one of the troublesome disturbances a physician encounters, and although efforts are made to determine the etiology, which is still obscure in many cases, the patient must be given relief from this distressing headache.

This report is concerned with a patient who has been studied thoroughly and in whom varied medication was employed. The therapy which gave the best results was Gynergen (ergotamine tartrate) which has been studied extensively, but because of the side reactions which frequently followed the parenteral administration of Gynergen, such as nausea and vomiting and occasionally pain in the extremities, Gynergen was discontinued at times even though it was the only substance which aborted an attack.

More recently, Horton, Peters and Blumenthal¹ reported their results with D.H.E.45 (dihydroergotamine), a drug closely related to ergotamine tartrate, and observed that D.H.E.45 is equally as effective as Gynergen but much less toxic. These observations were confirmed by Dannenberg², Hartman³, Clein⁴ and Friedman and Friedman⁵. My experience with D.H.E.45* confirms the findings of other observers and I wish to add the following case to the growing literature.

CASE REPORT

The patient, white, middle aged, married, has been having headaches for the last ten years, associated with nausea and vomiting. These headaches at first occurred every three or four months but recently have been increasing in frequency. For several weeks she has had a migraine attack every other day. She was studied thoroughly and nothing of a physical nature has been located which seems to have a bearing on the headaches. Laboratory findings were es-

entially negative, allergic tests were negative. The patient had the usual childhood illnesses. Menstrual period came at 13, 28-day interval of 5-day duration with some backache and pain in legs at the onset. Ovarian medication was employed without beneficial effect. Family history revealed that the mother of the patient suffered from migraine attacks until the time of the menopause, when they greatly subsided. One brother suffered from migraine type of headaches for two years in his early 40's. Neurological examination revealed nothing significant. The mental examination revealed no specific pattern of an abnormal nature. The only type of medication which has relieved her has been injections of Gynergen and if this drug is taken hypodermically, early in the attack, headache usually subsides in an hour. But the patient becomes quite wretched after an injection of Gynergen which results in nausea, vomiting and perhaps other toxic signs.

The work of Horton and his associates at the Mayo Clinic prompted me to try D.H.E.45 (dihydroergotamine) in an effort to abort the attack of migraine in this patient and with the hope of preventing the distressing symptoms which usually accompanied an injection of Gynergen. 1 cc. of D.H.E.45 was given early in the attack and within an hour or two the headache was relieved without side-effects. This good result was not only gratifying to the patient but also to the physician.

This patient has been taking D.H.E.45 parenterally for the past several weeks at the onset of an attack, with the desired results. At no time were there signs of toxicity or changes in pulse rate and blood pressure.

This new drug may well represent one of the outstanding contributions and the report of these observations, it is hoped, may encourage

*Furnished by Sandoz Chemical Works, Inc.

other clinicians to try D.H.E.45 in the management of migraine.

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Editorials

Present Political Problems

The adjournment of Congress gave the medical profession a chance to take a long breath, and to view the results of their efforts in preventing the passage of legislation which they deem detrimental to the private practice of medicine. Some good legislation emerged from the session and some which will probably turn out to be not so good. The bills embodying such major issues as compulsory health insurance died in committees. The hearings before the Senate Committee on Education and Labor pertaining to the Wagner-Murray-Dingell Bill received the most public attention. Much of this testimony was published in the Journal of the A.M.A. and it is surprising how many doctors have read it. The Journal is to be complimented because there has probably been nothing else published on the subject of medical economics which attracted the interest of so many of the rank and file of the profession.

The mere fact that the major issues died in committees in the last session will not mean that there will be any relaxation on the part of these same forces to promote the same legislation when Congress re-convenes. Both the

C. I. O. and the A. F. L. are pledged to enactment of compulsory health insurance, and as long as organized labor continues in the driver's seat in Washington, we will be faced with this same battle. We must find out who our friends are in Congress and who our enemies are. In the dying days of the session Senator Pepper gave the impression to the Press that his subcommittee on Education and Labor had approved the principle of compulsory health insurance. This turned out to be an absolute falsehood, and Pepper was rebuked on the floor of the Senate. He apologized. However, the damage was done. And that is all a politician is interested in. John L. Lewis' welfare fund which is accumulating at the rate of about 25 million dollars annually, concerns the profession immensely as to the method by which it will be administered. And the railroad retirement act which was squeezed through Congress in the last rush, will provide an experiment in compulsory insurance as it provides sickness and obstetrical benefits to the railroad employees. The public is rapidly learning about all these questions and it behooves the profession to acquaint themselves with information about all these subjects to avoid embarrassment from time to time.

"... One of the Most Thrilling Developments ..."

The failure of laymen, especially business and labor leaders, to come to the fore for the medical profession in the present controversy over methods of providing medical service is not readily explained. One would think there would be many champions of the profession in lay groups considering the close relationships of many of them to individual doctors. But the fact is that there have been comparatively few. In this select group are Mr. Roy E. Larsen, President of Time Incorporated, publishers of the weekly news magazine.

Speaking before the Philadelphia County Medical Society on May 9, Mr. Larsen said:

"That most people want prepaid health insurance there is now no question. We must face up to the fact that there is tremendous interest in

the Federal plan, but there is a growing interest in voluntary plans. Two polls of public opinion were recently taken on this subject. The first, completed by Dr. George Gallup's Opinion Research Corporation, showed that a great many people were opposed to governmental medicine—in fact, 76 per cent of those people questioned were opposed to governmental control of the medical profession, and 87 per cent thought that compulsory insurance would not provide a satisfactory solution to the problem of medical care costs. The second poll, taken by the highly reputable National Opinion Research Center at the University of Denver, indicated that 48 per cent of all the people questioned preferred Government compulsory insurance to voluntary prepaid plans—that 68 per cent thought the Social Security law should include Government medical insurance. But the findings of both polls proved conclusively that people do want some form of prepaid insurance, whether it be compulsory governmental or a voluntary private plan. In the Gallup poll 63 per cent wanted an easier method for the payment of medical fees and 45 per cent thought that prepayment was the proper method to allay this want. In the Denver findings 82 per cent wanted medical payments made easier, and 55 per cent thought that prepayment was the proper method. So the problem boils down then, it seems to me—but perhaps I oversimplify it—to the question of how the American people are going to get their prepaid health insurance."

Mr. Larsen reviewed the history of voluntary insurance plans, the first of which was introduced in Tacoma, Washington, in 1917, followed by a second in Oregon in 1926. "Seven years ago," he said "there were only 1,500,000 people enrolled in the 40 voluntary health insurance plans existent at that time. What has happened since is one of the most thrilling developments in this country and a great tribute to the men of medicine and to voluntary hospitals who have accomplished it."

The Blue Cross Plan, he observed, has enrolled more people in a shorter time than any voluntary program in the history of the world. In approximately ten years, the Blue Cross enrolled 20,000,000 members. More than 3,000,000 people are now covered by private medical care insurance, and another 11,000,000 are protected by group policies in commercial companies, co-operative plans, and by other means, making a grand total of over 30,000,000 people covered by some form of voluntary health insurance.

He related that in Rhode Island 53 per cent of the population is now enrolled in Blue Cross. In Massachusetts a year ago, one of every six people was protected by private hospital insurance. In the western part of Pennsylvania there has been a vast increase in Blue Cross membership. "Such records," he said, "challenge Senator Murray's statement that 'volunteer plans just won't meet the need.'" He admitted that there are "bugs" in the machinery of voluntary prepaid medical insurance plans but believes that they will be eliminated as experience is gained with them; also that they can be coordinated on a nationwide basis.

"It is my personal belief—based on the record of those states and communities which have really done a job of selling their voluntary insurance plans—that 80 million people can be reached and covered by them. Take 55 million employees—or Mr. Wallace's 60 million—add their families—and you have a potential for voluntary health insurance plans in excess of 80 millions of people. With such an enrollment, there could be no argument for state or Federal health insurance."

Mr. Larsen emphasized that too few people know about voluntary plans and he urged that a better publicity program be inaugurated.

"I, for one," said Mr. Larsen, "would like to see more publicity put out by doctors and voluntary insurance plans to spread the available information concerning their achievements to every corner of the land. I have the courage to suggest this break with traditional ethics in the medical field because, in western Pennsylvania and in Massachusetts, for example, the job of informing the public is being done through paid advertising in the daily newspapers, on car cards, and over the radio with the greatest of success. This radical step in Massachusetts, taken in the citadel of conservative and traditional medicine, was approved by the Massachusetts Medical Society—the oldest in the country. I can understand that it was not an easy decision for the medical profession to make, but now that we know that advertising of voluntary prepaid medical plans has been successful wherever it has been tried and that, therefore, it is in the interest of the potential members of the plans and of the communities at large, I hope that it will be adopted by voluntary plans throughout the country."

Mr. Larsen stressed the "impact of the ten million men who have been and who are being demobilized from our armed forces and of the thousands of doctors who have been practicing group medicine in the Army and Navy and the Air Forces" upon our society. They, he said, will have a dominant voice in the development of policies of the Nation in the next decade. They have been recipients of the finest medical care and hospitalization the country could provide. They, especially those in the lower income positions, "will have little patience with a system which does not favorably compare with what they experience in our armed forces. We must make that available to them."

Reprint from *Medical Annals of the District of Columbia*.

Office of the Surgeon General

PROPOSED MEDICAL RESEARCH
CENTER OUTLINED BY
MAJ. GEN. N. T. KIRK

Major General Norman T. Kirk, Army Surgeon General, announced proposed plans for an Army Medical Research and Graduate Train-

ing Center at a press preview of Medical Department's exhibit booked July 1-5 for American Medical Association's 95th annual session in San Francisco.

The proposed Army center would be located at Forest Glen, Maryland. It is the site of National Park College which was converted to a convalescent hospital during the war to care for Walter Reed General Hospital patients. When the project is approved it will take approximately 12 years to construct.

With an eye toward post-war responsibilities of the Army Medical Department, such a center will consolidate Army research activities. Information gleaned in all Army laboratories now scattered throughout the United States and Panama would become available at the center. And, rare maladies encountered would be subjected to expert civilian and military scientific study as patients suffering such diseases would be transferred to a 1,000 bed general hospital which will be established in the center for clinical observation.

General Kirk has expressed a desire to have the general hospital and Army Institute of Pathology erected first with other buildings to follow. Other proposed installations are an Army Institute of Research Medicine and Dentistry, Army Institute of Research Surgery and Radiation Therapy, Army School of Global Medicine and an administration building.

The school of global medicine was born during World War II as American troops pushed into remote corners of the Arctic and the tropics and encountered little-known maladies.

Primarily devoted to basic research and graduate training, the Army is not in a position at this time to estimate how many laboratories would be discontinued in the field and placed in the proposed center. Further, many laboratories are strategically located with reference to study of certain endemic diseases, the permanent location of specialized troops such as Armored Forces and Chemical Warfare and with regard to accessibility to civilian medical equipment and laboratories.

It is certain that Army Institute of Pathology would be located at the center as soon as possible. World renowned, the pathology institute comprises Department of Pathology, American Registry of Pathology, Army Medical Illustration Service and Army Medical Museum. Found-

ed during the Civil War, Army Institute of Pathology, formerly the Army Medical Museum, occupied its present quarters in 1887. Its 19th Century officers are now totally inadequate.

General Kirk explained that careful study had been given the present Army Medical Center grounds at Walter Reed General Hospital. Not more than two of the proposed units could be constructed in space immediately available.

Forest Glen, which is near District of Columbia and adjacent to Rock Creek Park, a national site, is large enough to accommodate the proposed center in the present and future. All research installations could be housed there and living quarters maintained for military scientists who might be employed under United States Civil Service ratings. Further, garrison life would be possible with a parade ground and other military requisites available.

General Kirk emphasized that the proposed center was still in the planning stage and had not received War Department approval.

THE SIGNIFICANCE OF THE FIRST LAPSE IN OUTPATIENT VENEREAL DISEASE CLINICS

Journal of Venereal Disease Information, Washington, 26:198 201 (September), 1945.

FREDERICK G. GILICK, DOROTHY STUBBS and ROBERT R. SWANK

A study of 330 clinic patients with early syphilis demonstrates statistically that patients who became chronic case-holding problems start lapsing early in the course of their treatment.

Among the patients studied were 114 on the routine standard schedule of weekly treatments, 175 on the semi-weekly schedule, and 41 treated 3 times a week. A lapse was defined as an absence from the clinic for more than 10 days for routine treatment, more than 6 days for semi-weekly treatment, and more than 4 days for thrice weekly treatment. No selection was made with regard to race, sex or age. Over 90 per cent of the patients were Negro.

In order to show the relation between the time of the first lapse and total treatment received, the cases in each of the 3 treatment groups were tabulated according to whether they received as many as 20 arsenical injections and according to the number of days and the number of treatments before the first lapse. A total of 20 or more injections of an arsenical drug

was selected as the minimum criterion of satisfactory treatment.

The study showed there was a real difference between the intensive and routine schedules, in that with the former, 48 per cent of the patients received at least 20 arsenical treatments compared with only 24 per cent in the latter. It is evident from these data that the more intensive the treatment schedule the greater is the chance that the patient will receive at least 20 injections. The difference between the schedules of treatment remains significant statistically even among patients who have completed 6 weeks of treatment without lapse.

When comparison is made according to the number of injections received before the first lapse, the differences tend to disappear and are no longer significant among patients who have received as many as 5 injections without lapse. In other words, for patients who have received 5 or more injections without lapse, the chance that they will go on to receive 20 or more injections does not differ in the various schedules and the average for all schedules is a satisfactory estimate for any one of them. Since the differences remain significant until the eighth week, when the basis of comparison is the length of time before the first lapse, and by that time the number who have not lapsed is so small that the percentages do not mean much, it is clear that the crucial factor is the number of injections received. For instance, when as many as 9 injections are given before the first lapse, 85 per cent of the patients go on to receive at least 20 injections, and when 11 injections are given before the first lapse, 90 per cent will get 20 injections. Even 7 injections without a lapse will insure 20 or more arsenical injections in 75 per cent of the patients.

The study demonstrates statistically that the patients who lapse early in the course of treatment are most likely to become chronic absentees. Patients who can be kept under treatment for 10 or 11 injections without a lapse will go on to complete a satisfactory course in a proportion comparable to that obtained with hospitalization procedure. Those who lapse during the first few injections are unlikely ever to complete treatment and probably should be given inpatient care if possible. Since up to the fifth injection there is a significant difference between the routine and the intensive outpatient schemes of treatment with respect to the num-

ber of patients who will complete treatment, and since only 25 per cent of those on intensive schedules lapse after the first injection as compared with 40 per cent of those on routine schedules, it would seem advisable to require 2 or more clinic visits a week for the first few weeks even of patients who are on routine therapy.

NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, Inc.

A tri-state conference of Arizona, Nevada, and New Mexico chapters of the National Foundation for Infantile Paralysis together with state and county public health departments, medical associations, and crippled children's services of the three states will be held in Phoenix November 22-23-24, Margaret M. Enright, Arizona state representative, informed today. Headquarters will be at the Hotel Westward Ho.

Educational in character, sessions will be led by national leaders from Foundation headquarters in New York which will include Dr. Hart E. Van Riper, Medical director, Dr. Morton Seidenfeld, director of psychological research, Miss Sally Lucan Jean, director of health education, and Warren Kingsbury, regional director of the Pacific Coast area.

Interest in the program and reservations coming in at this early date gives indication of capacity attendance, Miss Enright said.

THE AMERICAN COLLEGE OF PHYSICIANS announces its

Twenty-eighth Annual Session
to be held in

CHICAGO, ILL.—April 28 - May 2, 1947

Dr. David P. Barr, New York, is President of the College, and will be in charge of the program of General Sessions and Lectures. Dr. LeRoy H. Sloan, Chicago, has been appointed General Chairman, and will be in charge of the program of Hospital Clinics and Panels, as well as local arrangements, entertainment, etc. Mr. Edward R. Loveland, Executive Secretary of the College, 4200 Pine Street, Philadelphia 4, will have charge of the general management of the session and the technical exhibits.

Other medical societies are urged to note these dates in order that conflicts in meeting dates may be avoided for mutual benefit.

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- Syphilis and Social Diseases**—E. Payne Palmer, Jr. (1949), Phoenix; C. C. Creighton (1948), Cottonwood; L. H. Howard (1947), Tucson.
- Tuberculosis Control**—Ed J. Nagoda (1949), Tucson; E. W. Phillips (1948), Phoenix; Jas. H. Allen (1947), Prescott.

Non-Scientific

- Auxiliary Advisory**—Esther M. Closson (1949), Tucson; Florence B. Yount (1948), Prescott; Geo. R. Barfoot (1947), Phoenix.
- Editing and Publishing**—Jesse D. Hamer (1949), Phoenix; R. Lee Foster (1948), Phoenix; Walter Brazie (1947), Kingman.
- Industrial Relations**—Jas. Lytton-Smith, Phoenix; Meade Clyne, Tucson; A. C. Carlson, Cottonwood; J. B. Littlefield, Tucson; O. E. Utzinger, Ray. (Members of this committee are subject to annual appointment.)
- Medical Defense**—D. F. Harbridge (1949) Chairman, Phoenix; A. C. Carlson (1948), Cottonwood; John W. Pennington (1947), Phoenix.
- Medical Economics**—Meade Clyne (1949), Tucson; Jos. M. Greer (1948), Phoenix; Robt. S. Flinn (1947), Phoenix.
- Public Health Education**—Paul H. Case (1949), Phoenix; Joseph Saba (1948), Bisbee; John F. Stanley (1948), Yuma; M. W. Merrill (1947), Phoenix.
- Public Policy and Legislation**—Jesse D. Hamer (1949), Phoenix; Walter Brazie (1948), Kingman; Charles A. Thomas (1947), Tucson.
- State Health Relations**—Donald F. Hill (1949), Tucson; E. Henry Running (1948), Phoenix; Louis G. Jekel (1947), Phoenix.

President's Message

Vacations are over and activities for the Association are getting under way. The Council will convene on the 29th of September to transact a considerable calendar of business. After the meeting a letter will be sent the membership apprising them of the general program for the year.

Of interest to all is the Blue Shield medical service plan authorized and set up at the called meeting of the House on June 22nd last. The summer has seen progress in that all the necessary steps for incorporation have been taken and fulfilled. The certificate of incorporation was issued on September 14 after the legal publication of the Articles and various other points of law had been met.

It was the original intent to have the service in operation by this time but we failed to take into account some of the tedious processes of law—such as six weeks required for publication of the Articles—and the additional fact that many elected to various offices in the service were taking well-earned vacations more extensive than usual due to the fact that vacations were deferred during the war years. Now that legal formalities have been met and vacations largely over—some officials still being absent—we should set late fall or early winter as the goal for actual operation.

Although we are relatively late in establishing such a service in Arizona (there are 11 state-wide medical society plans in operation, while in 31 states there are some 73 plans either in operation or getting under way) we have profitted by our delay in that by careful study and analysis we can avoid the mistakes others have made.

In like manner we feel that the choice of a service plan, rather an indemnity, plan is wise as the experiences of other states have also demonstrated. The Arizona Medical Association is in agreement with Dr. James C. McCann, President of the Massachusetts Medical Society, a surgeon, and vitally interested

in the medical service plan of that state (probably the most successful of any existing plan), in his statement before the California Medical Association in recent annual session when he said in speaking on PREPAYMENT AND THE FUTURE OF MEDICINE that: "A service contract is essential for two basic reasons: First, it alone meets the needs of that large number of under-income segment of the public (and he places \$3,227.50 for 1946 as comparable with \$2,500 for 1940 — other incomes scaled proportionately) for some guarantee of service on an equitable basis, with protection against overcharge which may too frequently be excessive. Second, the objection to a cash indemnity contract is the raw fact that it encompasses a rejection by the profession of its proper responsibility to the under-income group of people. Only with the knowledge of such assured protection will the public buy in a volume which will make the voluntary approach to this problem a success and thus forestall federal action in the field of prepaid medical care. It (the indemnity plan) is an escapist's make-shift too often supported by shortsighted spokesmen of our medical organizations. It has been adopted in some states with the bland assertion that it saves a lot of headaches. . . . It fosters such practices as: one hundred seventy-five dollars for an appendectomy on a shop girl. . . . Such practices are rapidly precipitating on our heads the final and overwhelming headache of compulsory health insurance which cannot be treated by simply being against it."

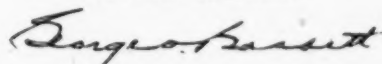
The Arizona Medical Association is providing the funds to assure a sound administration and the prompt payment of fees to participating physicians. The schedule of fees will be comparable to those of industrial compensation, and payment will begin with the start of the service on a monthly billing basis. There will be no waiting for payment of fees and no delay in providing service to the subscribers.

Massachusetts has participation by 85% of the physicians of the state. It has a subscription list of 250,000 and a reserve of \$300,000. It has surpassed in four years what others had taken seven to accomplish. It has a high degree of public confidence. It began with the surgical-obstetrical contract and is now expanding.

The Arizona State Medical Association

through its Council and House, has adopted the Service Plan, which when inaugurated will operate through and jointly with the Blue Cross — these services complement each other and offer the people of Arizona in the lower income brackets a service against catastrophic illness at low cost. Let us all give our whole-hearted support to this Service.

Faternally yours,



President.

Report of the Delegate

American Medical Association, Annual Meeting
San Francisco, California
July 1-5, 1946

Almost 8,000 physicians were attracted to the American Medical Association Session held at San Francisco, July 1-5, 1946, which was an all time high attendance for any medical assemblage ever held on the Pacific coast. Some inconvenience was experienced in housing the throngs, as well as in transportation, inasmuch as a street car strike was called on the eve preceding the opening of the convention. Excellent local arrangements, however, smoothed out all these difficulties, and the meeting went ahead to the satisfaction of all.

Scientific sessions and the exhibits were conveniently housed in the Civic Center. The Auditorium was filled to capacity with scientific and technical exhibits. The Army and Navy Medical Departments had special exhibits which were very instructive, as were the exhibits on fractures and physical medicine.

A large canvas, 25' x 40', spread across one end of the Civic Auditorium depicting the Ten Point Program of the American Medical Association. This was very impressive and declared to all who gazed upon it the existence of a new Magna Charta of American Medicine. The writer could not help but feel, however, that this large display would have attracted much comment and discussion had it been hung outside the Auditorium where it could have been seen by the lay public. The Ten Point Program referred to follows:

MEDICINE'S NATIONAL HEALTH PROGRAM

1. Minimum standards of nutrition, hous-

ing, clothing and recreation are fundamental to good health.

2. Preventive medical services should be available to all and should be rendered through professionally competent health departments. Medical care to those unable to provide for themselves should be administered by local and private agencies with the aid of public funds when needed, preferably by a physician of the patient's choice.

3. Adequate prenatal and maternity care should be made available to all mothers. Public funds when needed should be administered by local and private agencies.

4. Every child should have proper attention, including scientific nutrition, immunization and other services included in infant welfare. Such services are best supplied by personal contact between the mother and the individual physician but may be provided through child health centers administered locally with support by tax funds whenever the need can be shown.

5. Health and diagnostic centers and hospitals necessary to community needs are preferably supplied by local agencies. When such facilities are unavailable, aid may be provided by federal funds under a plan similar to the provisions of the Hill-Burton bill.

6. Voluntary health insurance for hospitalization and medical care is approved, the principles of such insurance plans to be acceptable to the Council on Medical Service and to authoritative bodies of state medical associations.

7. Medical care, including hospitalization, to all veterans should be provided preferably by a physician of the veteran's choice, with payment through a plan agreed on between the state medical association and the Veterans' Administration.

8. Research for the advancement of medical science, including a National Science Foundation, is endorsed.

9. Services rendered by volunteer philanthropic health agencies should be encouraged.

10. Widespread education in the field of health, and the widest possible dissemination of information regarding the prevention of disease and its treatment, are necessary functions of all departments of public health, medical associations and school authorities.

The House of Delegates met at the St. Francis Hotel on July 1, 2 and 4. In addition to hearing and receiving reports from the President of the AMA, the Secretary, the Treasurer, and of the various Councils and Standing Committees, the House had the privilege of hearing General Kirk, Surgeon General of the Army, and Admiral McIntyre of the Navy.

There were a number of timely resolutions adopted by the House this year. Stated in brief, they are as follows:

1. The Council on Medical Service and Public Relations in conjunction with the Bureau of Legal Medicine was instructed to confer with the sponsors of S. B. 2143 (The Taft Health Bill recently introduced in Congress) to discuss the features of this bill and to report back to the Board of Trustees the results of its conferences and be guided by its instructions.

2. The proper agency of the AMA is to request each state medical society to assume appropriate leadership in the development of adequate mental disease programs within its state, and to cooperate with other state groups and local agencies in stimulating public interest and support in order to assure the proper operation and maintenance of such programs.

3. During the intervening months since last December, the Board of Trustees has employed a firm of public relations experts in order to receive recommendations for the future conduct of the AMA public relations. This Rich Public Relations Report was presented in part by the Chairman of the Board of Trustees in Executive Session. Much comment, discussion, and interrogation was occasioned by the presentation of this report. The entire text of these public relations consultants was not revealed. We did learn, however, that these experts advocated "a separation of scientific interpretations and medical economics from the future direction of public relations." As a result of actions taken by the House, however, on those portions of the Rich Report, and upon recommendations of the Board of Trustees, the following resolutions were adopted:

(a) To stress the scientific activities of the Association through the AMA Journal, and through an expanded Hygeia, under the supervision of the Editor;

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RESEARCH IN THE SERVICE OF MEDICINE

(b) Expansion and revitalization of the Bureau of Medical Economics with employment of a well qualified Economist whose factual material will be employed in the field of the AMA Journal, Hygeia and other publication;

(c) The organization and continuation of effort in the field of Public Relations under the immediate supervision of the AMA manager, and the Board of Trustees, with an Executive Assistant who is to be a public relations expert; adequate personnel to be employed to coordinate all public relations activities of the Association other than Scientific;

(d) In as much as all public relations in the future will be correlated in this new set up, the Council on Medical Service and Public Relations had its name changed to the Council on Medical Service.

(e) The Council on Medical Service is now free to concentrate on Medical Service Plans, and to promote and assist in the development of these plans in all states through the Associated Medical Care Plans, Inc. Other spheres of activity and duties of this Committee were enlarged, among them being a Division of Prepayment Medical Plans to promote, expand, correlate and assist each State in any manner possible. It was instructed and encouraged to promote the AMA Ten Point Program into actual practice. It is to intensify its work in professional relations by its News Letter, and is to promote and extend the scope of its Regional Conferences. The Council was encouraged to develop further the idea of a National Health Council, to create a satisfactory Speakers' Bureau and to continue its Washington office.

The Council was also instructed to consider the medical care and economic aspects arising from the creation of health and welfare funds under Labor Union control in the soft coal industry. A series of meetings will be arranged for the purpose of deciding ways and means of finding a solution to this problem. In this endeavor, the Council on Industrial Health will assist the Council on Medical Service.

Other important actions taken by the House of Delegates included:

1. The Speaker of the House was instructed to appoint a committee to confer with the Board of Trustees on the remaining issues of

the public relations survey (Rich report) and to report at the next meeting of the House in December.

2. A change in the By-laws was adopted providing for two sessions of the House of Delegates each year; a supplemental meeting to be held each December.

3. A special committee was established for the purpose of revising the Constitution and By-laws of the Association.

4. The Judicial Council was requested to submit suggestions for a revision of the Principles of Medical Ethics, after thorough study and review.

5. The House re-affirmed its opposition to selected sections of the Wagner-Murray-Dingell Bill and to the Pepper Bill.

6. A re-apportionment of delegates to the House for 1947, 1948 and 1949, on the basis of one delegate for each 1000 members or fraction thereof was made. California, District of Columbia, North Carolina and Oregon will each gain one delegate. Ohio, Missouri and Pennsylvania will lose one each.

7. The House also urged the Health Organization of the United Nations to limit its Constitution so that it will consider problems only of preventive medicine, standardization of drugs and biologic preparations, and the prevention of dissemination of diseases among nations. Questions relating to the nature of medical practice in any nation should not be one of the functions for consideration by this international organization.

By acclamation, the House named Dr. Olin R. West of Chicago as President-Elect, Dr. Edwin L. Bortz of Philadelphia as Vice-President, Dr. George F. Lull as Secretary, Dr. J. J. Moore as Treasurer, Dr. R. W. Fouts of Omaha as Speaker of the House, and F. F. Barzell of Philadelphia as Vice-Speaker.

The Board of Trustees reported that it had instructed Dr. Lull to arrange office space at AMA Headquarters for the Medical Auxiliary. The entire Board of Trustees of the AMA will serve as the advisory committee to the National Medical Auxiliary and will sit in joint session for discussion of mutual problems at each Annual Meeting.

Respectfully Submitted,

Jesse D. Hamer, M. D., Delegate,
Arizona State Medical Association

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MEDICO-LEGAL SECTION

IN THE SUPREME COURT OF THE STATE OF ARIZONA

This proceeding is before us on certiorari from an award of The Industrial Commission awarding compensation to Waldo DeWitt, the injured employee. The Phelps Dodge Corporation, the employer, is the petitioner securing this review. The facts of the case are not in dispute and may be stated as follows: The employee, while engaged in the usual course of employment, suffered an injury to his back occasioned in the following manner. DeWitt picked up a rim mounted but deflated truck tire, which is estimated to have weighed at the time 70 to 100 pounds; took one step; *threw* and *pushed* the rim and tire up into the truck. At this moment, he experienced what he described as "felt like a hot iron hit me in the back of the head; like the world was whirling around, and everything went blank." He turned and walked unsteadily to a nearby bench; sat down; broke into sweat and tremors; and, in a faint condition, eased off the bench to the ground. He was taken promptly by automobile to the office of a doctor, and on the way complained of pain in his head and arms. On arrival at hospital he was in a state of shock, and afflicted with tremor in both his right arm and right leg. Shortly thereafter he filed a claim for workmen's compensation, claiming disability as a result of partial paralysis of the right side, which condition persisted for at least six months. He was treated by seven different doctors including three neurologists. Various inconclusive hypotheses were suggested as to the neurological sources of the symptoms manifested. There was some disagreement as to the extent of disability, but no indication was found of physical injury from *external* cause. The medical evidence indicates that the employee suffered some *internal* strain, sprain, rupture, or hemorrhage.

Two months after the incident, he was examined by Dr. A. C. Kingsley, nerve specialist. His report, in part, reads as follows: "Sudden onset with unconsciousness would indicate cerebral or high cervical lesion. There is at this time sensory disturbance involving the third and fourth cervical roots as well as the lower cervical area. Whether at time of injury a partial

dislocation or hemorrhage high in cervical cord it is difficult to state."

There was nothing unusual in the manner of picking up the tire and rim. No *apparent* overexertion was involved; no untoward or unexpected event took place, such as slipping, falling or being struck. The claimant, prior to the accident, had enjoyed good health, and was strong and accustomed to performing hard manual labor. There is no evidence in the record to indicate that the employee was suffering from any preexisting disease or ailment.

In challenging the award, the petitioner advances the following proposition: "In order that an employee be entitled to compensation, there must be an injury which is caused by some external event of an unusual or unexpected nature." Petitioner calls attention to the various code sections which limit compensation to cases where the employee has sustained an "injury *by accident* and arising out of and in the course of his employment." (Emphasis supplied) It is petitioner's position that this case is ruled by *Rowe v. Goldberg Film Delivery Lines, Inc.*, 50 Ariz. 349, 72 Pac. (2d) 432, which with other decisions of this court followed *Pierce v. Phelps Dodge Corp.*, 42 Ariz. 436, 26 Pac. (2d) 1017. On the other hand, respondent, in its brief, contends that the *Pierce* case in effect was overruled by *In the Matter of Mitchell*, 61 Ariz. 436, 150 Pac. (2d) 355, and that the latter case is controlling here.

Here it may be well to indicate that in the *Pierce* case the employee was suffering from pre-existing myocarditis, of which he was aware. Additional facts in the *Pierce* case were that during the morning *Pierce* climbed up and down ladders in the mine without showing any bad effects or making any complaint. When the noon hour arrived, he sat down to eat his lunch and had just finished the meal when he arose from a sitting or reclining position, walked a few hundred feet, suddenly collapsed, and died a few moments later.

In the *Rowe* case the employee leaned over to pick up two boxes of films, at which time he experienced a pain in his chest, and suffered a spontaneous pneumothorax. There the chief concern of the court was to determine whether or not there had been an injury by accident. We have at no time held or even indicated that compensation is payable other than for injury by accident.

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Feinberg, S. M.: Allergy in Practice,
Chicago, The Year Book Publishers, Inc., 1944, p. 502.

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The provisions of the Workmen's Compensation Law of Arizona directing compensation to be paid injured employees are embodied in sections 56-930, 56-931, 56-936, and 56-952, A.C.A. 1939. Each of these sections limits compensation to cases where the employee has sustained an "injury by accident arising out of and in the course of his employment."

This requirement, of injury by accident, has been before the court on more than one occasion. In *Pierce v. Phelps Dodge Corp. et al.*, 42 Ariz. 436, 26 Pac. (2d) 1017, involving the question of whether death from a pre-existing heart disease, accelerated by the ordinary and usual conditions of the occupation of the employee, was subject to compensation, the court discusses the language of section 56-930 and particularly the phrase "injured by accident," saying:

"We come then to the interpretation of the phrase 'injured *** by accident' as used in the Compensation Act, and particularly of the word 'accident.' *** The word 'injured,' when used as a participial adjective as it is here, is defined by Webster as 'damaged.' The word 'accident' is, by the same authority, 'an event that takes

place without one's foresight or expectation; an undesigned, sudden and unexpected event."

"It is obvious that while 'injured' always implies a result, the word 'accident' may mean either a cause or a result, and which it is must be determined by the context. The preposition 'by,' which is found between the word 'injured' and the word 'accident' supplies the answer. Used as it is, it can only mean 'by medium of, in consequence of, or through the agency of,' and the 'accident' is, therefore, the cause of the injury. ***

"*** We conclude that on reason, notwithstanding there may be many authorities to the contrary, in the phrase 'injured *** by accident' as found in our Compensation Act, the word 'accident' refers to the cause of the injury and not to the injury itself.

"following this rule, in order that an employee be entitled to compensation there must be a result, an injury or damage, which is caused by 'an event that takes place without one's foresight or expectation; an undesigned, sudden and unexpected event.'"

And in applying the above interpretation of the phrase to the facts involved in the *Pierce* case, the court, in the concluding portion of its opinion, said:

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"Applying this rule to the facts of the present case, there is no unexpected event which caused an injury, which injury resulted in a disease or an aggravation thereof. On the contrary, the events which preceded the death of Pierce, and, as urged by claimants, accelerated it, were the usual, ordinary, necessary and expected incidents of his occupation. It is true that the death from the disease was sudden and unexpected, but as we have stated the undesigned, sudden and unexpected event which must exist in order to create the right to compensation must be found in the original cause and not in either of the subsequent results. *** "

In sustaining the award denying compensation in the Rowe case, the court said:

" *** It is only when there is some unusual, unexpected, and extraordinary event not reasonably contemplated as a part of the normal conditions of the employment, which causes an injury, that compensation is awarded. *** "

"If, on the other hand, there is no accident, such as a slip or a fall, and it is merely the ordinary shifting of packages required by the business which, due to the physical condition of the petitioner or any other reason not involving an accident as we have defined it, causes the injury, he cannot recover compensation."

The court then went on to apply the princi-

ples announced to the facts involved, saying:

"If it be true that there was no sudden or unexpected jerk, slip, or fall which caused the spontaneous pneumothorax, but that it merely arose out of the usual, ordinary, necessary, and expected incidents of petitioner's occupation, such as lifting and moving the packages which he had in his truck, the injury he suffered was not compensable, because it resulted from the ordinary course of his occupation and not from an accident occurring therein."

In the Mitchell case, we determined that, in law, there had been an accident, and that injury and death flowed therefrom. In so doing, we pointed out that the facts establishing the occurrence of the accident did not fit into the definition of "accident" as given in the Pierce case. We concluded that it was not indispensable to an accident that it should arise from a sudden or instantaneous event or occurrence and presumably accompanied by an external act or occurrence. Nevertheless, we pointed out in the Mitchell case that the Pierce case had been correctly disposed of in view of the facts there existing even though the restrictive definition in the Pierce case was abrogated. That the Pierce case was decided correctly is apparent because

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there was no casual connection between the employee's death and any accident. The employee merely collapsed while normally walking from one place to another.

In the Rowe case there was no evidence of any strain or overexertion. The employee merely leaned over to pick up packages. Even had he picked them up there would have been no substantial causal connection between the resulting injury and the effort expended for the reason that the packages were of inconsequential size and weight. We do not subscribe to the rule laid down in the English case of *Clover, Clayton & Co., V. Hughes*, 26 Times L.R. 359, in which the Lord Chancellor said, among other things: "An accident arises out of the employment when the required exertion producing the accident is too great for the man undertaking the work, *whatever the degree of exertion* or the condition of health." (Emphasis supplied) The rule in the *Clover* case has been adopted in the State of Washington and many other jurisdictions. See *Frandida v. Dept. of Labor and Industries*, 137 Wash. 530, 243 Pac. 5; *McCormick Lumber Co. v. Dept. of Labor and Industries*, 7 Wash. (2d) 40, 108 Pac. (2d) 807. We are of the opinion that where a workman is suffering from a pre-existing diseased condition and while engaged in his usual work under circumstances which require an extra or unusual strain or effect, suddenly dies, his death or injury is not the result of injury by accident. An employer is not the insurer of the health of his employees. *Rowe v. Goldberg Film Delivery Lines, Inc.*, 50 Ariz. 349, 72 Pac. (2d) 432; *In the Matter of Mitchell*, 61 Ariz. 436, 150 Pac. (2d) 355; *Aluminum Co. of Am. v. Ind. Com.* (Ariz.), 152 Pac. (2d) 297.

In the case of *Wiggins v. Pratt-Gilbert Hardware Co.*, 48 Ariz. 375, 62 Pac. (2d) 124, we had under consideration the case of a workman whose injury resulted from a strain while lifting. It appeared that the employee, while working on a pump, lifted it to place it on some planks so that he could better clean it. Both his hands and the pump were somewhat greasy, and the pump started to slip. In order to prevent its falling, he twisted himself into an abnormal position and felt something give way inside of him. In the course of the opinion the following language appears:

"Petitioner devotes much time arguing that the word 'accident' is not limited to a fall or

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blow. This, of course, is true, nor does the respondent contend it is not, but admits substantially, by its brief, that an unexpected strain incurred in the line of duty may, and usually is, an 'accident.'"

As against the finding of the Commission that there was no accident this court concluded that the evidence was conclusive that there was an accident within the meaning of the Workmen's Compensation Law. We there recognized that an unexpected strain incurred in the line of duty usually is an accident. It may be suggested that the conclusion was correct in view of the fact that the pump started to slip and that this was an unexpected and unanticipated circumstance in the nature of an accident. With as much force and logic it might be contended that nothing unexpected and unforeseen occurred, in that the lifting of heavy, greasy objects with greasy hands entails not only the possibility but rather the probability of slipping and sliding. The point is that the employee suffered personal injury from an accident arising out of and in the course of his employment caused in whole or in part or contributed to by a necessary risk or danger of such employment, or a necessary risk inherent therein, within the contemplation of section 8, article 18 of the Arizona Constitution. In the Mitchell case, we pointed out that the constitutional provision is broader in its scope than the legislative enactment adopted in pursuance of the constitutional mandate. In the Mitchell case, we said:

"A construction of the latter (sec. 56-936, A. C. A. 1939) must be governed by the constitutional provisions."

In the case of Vitanza v. Iron City Produce Co., 131 Pa. S. 441, 200 Atl. 311, it is pointed out that an accident may occur to an employee when he is performing his usual work and that "When such happenings are external they may be readily identified as accidents. In the same manner, an accident or unusual happening may occur within the body." In this latter case, it appeared that the injured employee picked up a crate of lettuce weighing between 75 and 80 pounds from a top tier at a height of about five feet; swung it to the right; and set it on the floor. When he raised up he felt a sharp pain in his right side. Following this he was totally disabled for a few weeks and thereafter suffered a partial disability. With reference to this occurrence the court used the following language, of which we approve:

" *** The unusual twist, strain, or sprain was an unusual happening. If while carrying a crate the claimant had turned his ankle, fallen, and broken his arm, the turning of the ankle would have been the unusual event that we denominate an accident. Just so, in the present case the claimant twisted, strained, or disarranged muscle, tendon, or tissue in such a manner that it caused an internal injury; at least, the board so found as a fact. The only difference in the two situations is that the accident in one case was external and in the other was internal. While we have in some cases referred to the injury to the body as an accident, it is more accurate to say that from the character of the injury taken with the circumstances we may infer an accident. This is just what the fact-finding body did."

Cases to like effect are *Horefal v. Pacific Mut. Life Ins. Co.*, 32 Wash. 132, 72 Pac. 1028; *Bartlinski v. Northumberland Mining Co.*, 117 Pa. Super. 437, 177 Atl. 518; *Chirico v. Kappeler*, 61 R. I. 128, 200 Atl. 447; *Hennen v. Louisiana Highway Dept.* (La. App. 1938) 178 So. 654.

The question of what will or will not constitute an accident under given circumstances is dependent upon the facts of each particular case. *Rue v. Eagle Pieher Lead Co.*, 225 Mo. App. 408, 38 S. W. (2d) 487.

Whether there is an accident is usually one for the fact-finding body. *Rinehart v. F. M. Stamper Co.*, 227 Mo. App. 653, 55 S. W. (2d) 729, 732.

It is also the law that whether an injury is an accident is usually a mixed question of law and fact, but when applied to ascertained facts it becomes a question of law. *Birdwell v. Three Forks Portland Cement Co.*, 98 Mont. 483, 40 Pac. (2d) 43, 47.

In the case at bar, the facts are admitted; there is no controversy. The applicant, from the evidence, was not suffering from any disability. In the process of lifting the rim and tire, weighing, from the evidence, between 70 to 100 pounds, and of throwing and pushing it up over the side into the truck, about four feet from the ground, he suddenly sustained an injury apparently to his spinal cord. The evidence is of such a character as to justify a finding by the Commission that the applicant in the performance of this work suffered a strain, from which his disablement resulted. Obviously, the commission found that this was an accident, and we think, under the law, it was justified in mak-

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ing such a finding. It had a right to infer that the applicant's effort was unusual, and that the pressure from the weight of the tire caused some injury which resulted in his disablement. All reasonable inferences drawn by the triers of the facts from the evidence will be sustained on review. *Vest v. Phoenix Motor Co.*, 50 Ariz. 137, 69 Pac. (2d) 793. If, in throwing up the rim and tire, the applicant had wrenched an arm, or thrown his wrist or shoulder out of joint, no one would contend that these facts did not constitute an accident. It is a matter of common knowledge that when men lift heavy objects they are subject to strain and resulting injury. This is a necessary risk or danger of the employment, and one that is inherent in the nature thereof. As a matter of law, therefore, the facts and the inferences to be drawn therefrom justify a finding that there was an injury by accident within the contemplation of the law and the previous rulings of this court. There was a direct, substantial, causal connection between the effort expended and the resulting injury. The fact findings of the Commission supported by any reasonable and substantial evidence are conclusive. *Smith v. Aluminum Co. of Am. (Ariz.)*, 155 Pac. (2d) 628.

The award is affirmed.

Book Reviews

NEW AND NONOFFICIAL REMEDIES, 1946, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1946. Cloth. Price, postpaid, 1.50. pp. 770. Chicago: American Medical Association, 1946.

New and Nonofficial Remedies is the book in which are listed and described the medicinal preparations which the Council on Pharmacy and Chemistry has found acceptable, under its rules, for the use of physicians. To have a product accepted, the manufacturer must declare its composition, give adequate proof of its therapeutic value and market it with claims which have been found valid by the Council. The present volume represents a cumulative epitome of the Council's work since its foundation in 1905.

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products set forth the actions, uses and dosage and usually a set of tests and standards. As its name implies, the book is intended to describe nonofficial preparations, that is preparations which are not included in such official publications as the Pharmacopeia and the National Formulary. However, some official articles are listed and described, these being in general those for which the Council feels the practicing physician needs concise and authoritative in the preface of the present volume, the Council lists some thirty-five official drugs ranging from acetylsalicylic acid to Strophanthin, which the Council feels it no longer necessary to consider for inclusion in the book. However, in most cases, a brief monograph on actions, uses and dosage gives information useful to the physician and for the control and advertising of marketed preparations.

Examination of the volume reveals that there have been no extensive or radical revisions of the general articles representing the twenty-four chapter heads under which preparations are classified. A few revisions of separate monographs may be mentioned: under Chaulmoogra Derivatives, the recommended use of Chaulmoogra Oil is limited to sarcoidosis; the dosage statement for Quinacrine Hydrochloride has been notably expanded to reflect the wartime experience with the drug. The radically revised monograph on Amphetamine is in harmony with the recent Council report on the use of this drug. Minor revisions of the chapter on Contraceptives are noted, and one marks the appearance of many additional products. The monograph on the Vitamin B Complex now mentions synthetic folic acid, recently made available for investigational use; but no accepted preparations are listed.

There appear to be no spectacularly new accepted preparations. Perhaps the most noteworthy is the casein hydrolysate, Amigen, acceptance of which will no doubt be followed by that of many more preparations representing the field of amino acid therapy.

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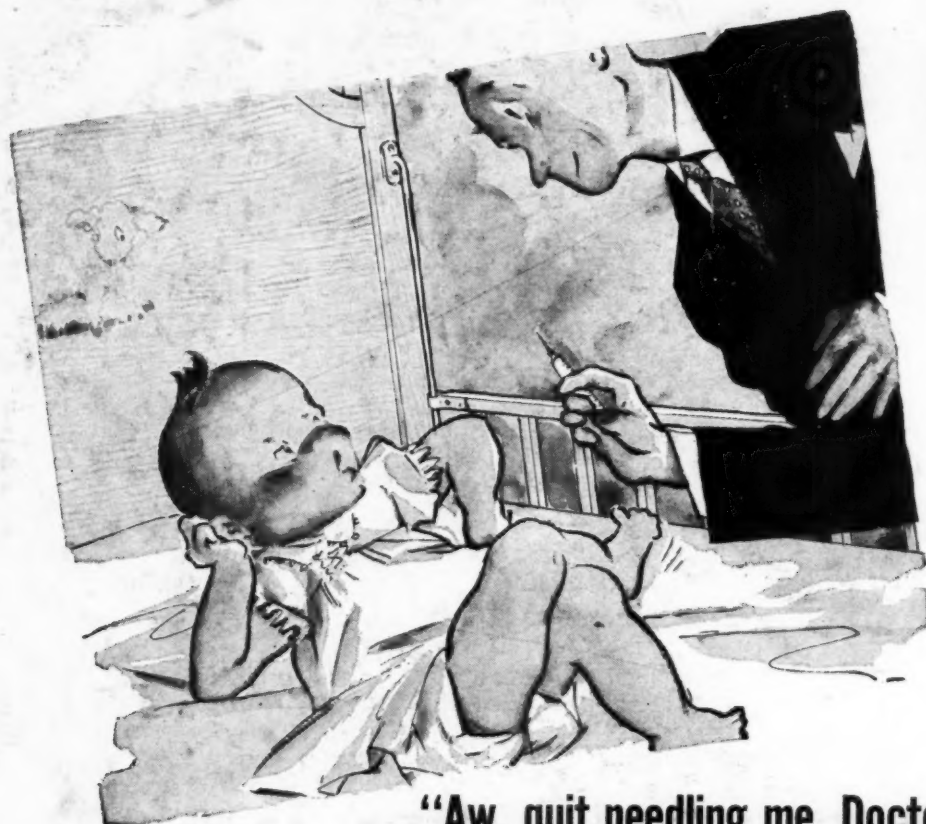
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